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The Marketing of Greens

J. W. PARK, Agricultural Economist
M. E. SMITH, Associate Marketing Specialist

Agricultural Marketing Administration

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UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C., APRIL 1942

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The Marketing of Greens

By J. W. Park *agricultural economist*, and M. E. Smith, *associate marketing specialist, Agricultural Marketing Administration*

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DEFINITION OF GREENS

The term "greens" as used in vegetable marketing is generally understood to refer to green leaves and stems of plants which are boiled for food. This is in contrast to salad plants which are usually eaten raw. It is impossible to make an exact classification of vegetable crops under this definition. Spinach, for example, is usually boiled and used as a green, but it is occasionally eaten uncooked as a salad. Lettuce, endive, and escarole, although they are green leafy plants, are considered as salads since they are mostly used uncooked. The outer green leaves of cabbage would classify as greens under the foregoing definition, but since a large part of a head of cabbage is blanched

it is not considered as a green. Brussels sprouts, however, are included with greens since a larger proportion of their weight is comprised of green leaves. Broccoli (Italian sprouting) consists mainly of bud clusters and green stems with a few leaves, and is included in this publication under the classification of greens. Leafy green vegetables are, in general, high in iron and vitamin A content.

Products included in this bulletin under the general term "greens" are spinach, broccoli, kale, brussels sprouts, collards, dandelions, turnip tops including seven-top turnips, hanover salad, mustard greens, broccoli rabe, Swiss chard, beet tops, and a few others of minor importance.

PRODUCTION AND SUPPLY

Among the products discussed under the term "greens" in this circular, production estimates of the Bureau of Agricultural Economics are available only for spinach and kale. The estimates of kale production are for one State only—Virginia. In addition to the estimated commercial production of these crops for market, there is some market-garden production principally in districts immediately surrounding large cities.

Since complete estimates of production are not available for the various greens, it is necessary to rely on records of receipts in certain large markets to get an idea of the approximate volume of consumption of these products. A large part of the greens consumed in rural communities and small towns is produced locally. Some "shipped-in" greens are purchased in rural communities, chiefly during the winter months in the North. Relatively large quantities of certain greens are used by some of the low-income groups in the cities.

The total average annual supply of greens reported in eight cities in the 3 years, 1938–40, was equivalent to nearly 20,000 carloads or roughly 14 million bushels (table 1). This figure is probably slightly below the actual supply because reports on motortruck receipts are incomplete, and some greens were shipped in cars of what are termed "mixed vegetables" and are not included in table 1. A rough estimate is that approximately one bushel of fresh greens per capita was used annually by people in these large cities.

TABLE 1.—*Unloads of leading greens including rail, boat, and reported truck receipts in eight markets, by years, 1931–1940* [1]

Market and commodity	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
Boston:	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*
Spinach	1,977	1,794	1,799	1,623	1,868	2,150	1,779	1,528	1,559	1,242
Broccoli	151	142	132	133	156	230	172	243	298	297
Dandelions	135	170	160	150	146	150	103	130	144	156
Brussels sprouts	4	16	27	26	24	29	28	39	42	47
Broccoli rabe			1	1	1	9	21	30	32	31
Kale	40	91	61	43	50	33	43	26	24	29
Swiss chard									23	21
Beet tops									15	14
Other greens	18	31	37	74	112	140	142	58	35	80
Total	2,325	2,244	2,217	2,050	2,357	2,741	2,288	2,054	2,172	1,917

[1] The quantities shown are in most instances slightly incomplete because of lack of full information on motortruck receipts. The degree of completeness of this truck-receipt information varied with the city, commodity, and year. Factors used in converting boat and truck receipts to carlots varied somewhat among cities. For leafy greens, the factor used generally in the eastern, midwestern, and southern markets was 700 bushels; and in the California markets, 400 Los Angeles lettuce crates. Rail and boat unload reports of specific greens or miscellaneous greens were practically complete, but some greens were undoubtedly included in carlot unloads reported as mixed vegetables and are not included in this table.

TABLE 1.—*Unloads of leading greens including rail, boat, and reported truck receipts in eight markets, by years, 1931–1940* [1]—Continued.

Market and commodity	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
New York:	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*
Spinach	4,569	4,895	4,590	4,849	5,260	5,771	4,789	4,949	5,189	4,998
Broccoli	971	999	874	1,065	1,321	1,354	974	1,034	1,166	1,228
Kale	652	1,083	877	1,063	1,155	1,151	900	650	820	787
Broccoli rabe	112	121	150	190	264	180	283	386	593	721
Swiss chard	67	256	94	298	436	651	262	154	489	404
Collards	116	206	225	83	170	306	363	289	464	525
Dandelions	397	488	187	878	644	836	535	351	435	401
Brussels sprouts	175	224	299	259	273	248	383	336	293	353
Mustard greens	84	120	20	179	166	287	175	82	308	316
Borage, "barrach"	161	122	71	118	64	258	88	64	58	28
Hanover salad						19	13	8	18	46
Beet tops	16	9	15	11	39	27	47	35	7	
Other greens	137	161	148	166	195	262	158	106	126	126
Total	7,457	8,684	7,550	9,159	9,987	11,350	8,970	8,444	9,966	9,933
Philadelphia:										
Spinach	1,629	1,668	(2)	(2)	(2)	1,782	1,660	1,656	1,657	1,576
Broccoli	126	104	(2)	(2)	(2)	172	173	200	225	259
Brussels sprouts	48	52	(2)	(2)	(2)	79	92	92	118	107
Kale	124	232	(2)	(2)	(2)	99	131	114	131	81
Other greens	517	481	(2)	(2)	(2)	467	507	559	576	628
Total	2,444	2,537	(2)	(2)	(2)	2,599	2,563	2,621	2,707	2,651
Atlanta:										
Collards	(2)	61	149	166	119	162	158	147	214	249
Spinach	(2)	38	69	99	83	99	87	82	90	92
Brussels sprouts	(2)							4	6	4
Broccoli	(2)			1	1	3	1	2	2	1
Other greens	(2)	233	181	296	322	392	304	336	483	452
Total	(2)	332	399	562	525	656	550	571	795	798
Chicago:										
Spinach	(2)	(2)	(2)	(2)	978	1,069	1,249	1,265	960	994
Broccoli	(2)	(2)	(2)	(2)	143	153	200	201	224	264
Brussels sprouts	(2)	(2)	(2)	(2)	33	81	81	114	114	144
Other greens	(2)	(2)	(2)	(2)	176	189	418	416	270	154
Total	(2)	(2)	(2)	(2)	1,330	1,492	1,948	1,996	1,568	1,556
New Orleans:										
Spinach	(2)	(2)	(2)	(2)	(2)	(2)	(2)	164	162	139
Mustard greens	(2)	(2)	(2)	(2)	(2)	(2)	(2)	67	66	63
Collards	(2)	(2)	(2)	(2)	(2)	(2)	(2)	39	47	44
Broccoli	(2)	(2)	(2)	(2)	(2)	(2)	(2)	11	17	10
Total	(2)	(2)	(2)	(2)	(2)	(2)	(2)	281	292	256
San Francisco:										
Spinach	435	481	586	637	581	500	621	603	603	524
Broccoli						44	134	133	122	155
Brussels sprouts	139	161	168	188	193	156	106	125	100	94
Other greens	89	90	208	145	140	130	111	64	88	93
Total	663	732	962	970	914	830	972	925	913	866
Los Angeles:										
Spinach	1,154	1,356	1,265	1,397	1,470	1,305	1,240	1,268	1,290	1,305
Mustard greens	175	160	184	208	222	235	215	205	256	243
Broccoli	72	113	126	132	149	217	199	229	215	265
Brussels sprouts	70	69	65	79	74	105	110	139	130	131
Swiss chard					1	2	3	5	10	12
Other greens				9	5	1	2	4	7	14
Total	1,471	1,698	1,640	1,825	1,921	1,865	1,769	1,850	1,908	1,970
Total 8 cities								18,742	20,321	19,947

[2] Records not complete; information on truck receipts not available.

Of the supply of greens received in full carloads and by truck in eight important cities in the 3 years, 1938–40, spinach comprised about 57 percent; broccoli, 12 percent; kale, 4 percent; and other greens, 27 percent.

TREND IN MARKET SUPPLIES

In certain cities where records on estimated truck receipts as well as rail and boat unloads are available, there was no pronounced trend in the annual supplies of greens for the period 1931–40, although there were considerable variations in volume of supply from year to year. For example, in New York City, the smallest annual quantity recorded during the 10-year period was 7,457 carloads in 1931 and the largest, 11,350 carloads in 1936. There was, however, a consistent increase in the unloads of greens in Atlanta from 1932–40. In most cities, there appears to have been an upward trend in the broccoli supply during the 10-year period. In some cities, there was a downward trend in the spinach supply since 1936 (table 1).

METHODS OF SALE

Various methods of sale are used in marketing greens in the producing districts. Growers who are located near or within easy trucking distance of city markets commonly sell on the farmers' markets or to chain stores or jobbers. In commercial areas in the South and West, many growers sell to local buyers or shippers or consign. The proportion of shipments consigned varies with market conditions and other factors. When supplies are large and prices low, many shipments are likely to be consigned. Large growers often ship their own crops. City dealers have in some instances engaged in extensive farming operations including production of greens. They market through their own connections in the cities or sell or consign to others. Marketing of greens cooperatively by growers is not important insofar as volume is concerned.

In the Norfolk, Va., district there are a fairly large number of shippers who operate packing and loading sheds. They buy for cash from growers and sell f. o. b. or consign, shipping by rail or truck. Some shipments are handled on a joint-account basis between city dealers and shippers.

In Texas, a common practice is for cash buyers to purchase spinach on an f. o. b. basis from growers who load their own cars. These buyers sell the spinach f. o. b., consign it, or they may ship it to their employers in the markets, including some chain stores. Large growers and shippers operate packing sheds for broccoli and other greens, and sell f. o. b., consign, or ship to their connections in the markets.

In California, large quantities of broccoli are grown by firms that operate also as city dealers. They ship to their own firms or consign to certain dealers in other markets. Chain stores and others buy for cash from local handlers.

When sales of greens are made on a consignment basis, the commission charged by city dealers is usually 7 or 10 percent. In some instances, where the grower is charged 10 percent, an agent at shipping point who solicits and handles the transaction receives 3 percent and the city commission merchant, 7 percent.

In the large markets, greens received by wholesalers are usually sold at private sale to jobbers or other large buyers in lots of five or more packages, or direct to retailers by the package or in small lots. Most carlot or trucklot receivers now sell direct to retailers as well as to jobbers or other large buyers. Chain stores buy in producing areas, in the wholesale city markets, and delivered at their warehouses. When

the producing districts in the vicinities of the markets are harvesting their crops of greens, large quantities are sold on the farmers' markets by the growers to retailers, consumers, or other buyers.

There is some redistribution of greens as well as other vegetables by motortruck from the larger cities to smaller cities and towns in the surrounding trade areas.

GRADING AND INSPECTION

Standards for grade have been issued by the United States Department of Agriculture for spinach, broccoli, and kale. These define requirements and prescribe tolerances for various grade classifications. Information on grading factors is given under the discussion of grading of the specific greens. Copies of the standards may be obtained upon request from the Agricultural Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

Federal-State inspection is available for a small charge in most of the important producing districts. The service is optional with the shipper insofar as the Federal Government is concerned. The Federal inspection service is also available in the larger city markets. A certificate reporting the findings of the inspection and describing the shipment in detail is furnished to the applicant and copies of the certificate may be purchased by financially interested parties. The report usually covers all pertinent facts about the shipment including descriptions of size, quality, and condition. It also includes a statement showing the grade of the lot, provided Federal or other grade specifications have been defined for the commodity inspected.

The use of official standards for grade and the inspection service facilitates transactions between shippers and distant buyers, furnishes the basis for contract sales, and discourages rejection on shipments at the markets without just cause. An inspection certificate that shows detailed information concerning the shipment is an aid in settling any damage claim with the transportation company. A Federal-State inspection certificate is accepted as prima facie evidence in any United States court and in some State courts. Growers are encouraged to produce good quality and shippers to pack properly through the use of official grading standards and the inspection service.

TRANSPORTATION

Greens, like other vegetables, are usually shipped to market by truck when the distance is not more than a few hundred miles.

For many of the leafy greens, the weight of a package is small in relation to its volume. The value per package is usually less than for many other vegetables. It is desirable to keep most leafy greens well refrigerated with crushed ice, particularly when they are shipped long distances. For these reasons, in long-distance shipments of greens, the truck is not used as extensively as for many other vegetables. Since large quantities of greens are grown in areas within easy trucking distance of many cities, truck shipments comprise a rather high proportion of market receipts.

The importance of the motortruck in transporting greens to market is indicated by the following figures showing the approximate percentage of the annual supply of greens which arrived by truck, for specified cities in 1940: Boston, 51; New York, 68; Philadelphia, 75;

Chicago, 38; Los Angeles, 97. For eight cities including Atlanta, New Orleans, and San Francisco in addition to those mentioned, about 71 percent of the greens arrived by truck in 1940. Sixty-eight percent of the spinach supply came by truck compared with 41 for broccoli and 90 for kale.

Most rail shipments of greens are made in refrigerator cars with top ice on and through the load as well as with ice in the containers, but without ice in the bunkers. Top ice is also often used in long-distance shipments by motortruck.

Many greens such as dandelions, beet tops, mustard greens, broccoli, and others are shipped in cars containing two or more of these or other vegetables. Many carlot shipments of mixed vegetables originate in Texas, Virginia, California, Louisiana, and several other States.

Approximate transportation charges in force in October 1940, on rail shipments of certain greens from representative shipping points to leading markets are shown in table 2. The transportation cost per package is dependent on billing weight, number of packages in the load, and quantity of top ice used. In some cities there are trucking charges on rail shipments from the railroad terminal to the wholesale market in the city.

Transportation costs on truck shipments vary widely. For truck shipments of spinach and similar greens from Norfolk, Va., to New York City in December 1940, the transportation charge was reported as about 15 cents per bushel.

SPINACH

Producing Areas and Production for Market

The commercial production of spinach for marketing fresh, according to the official estimates in 15 States, averaged about 13 million bushels of approximately 18 pounds in 1938–40. There are rather large quantities of spinach produced in market-garden areas that are not included in the official estimates. In the production estimates, the crop is divided into fall, early, second early, intermediate, and late, in accordance with the approximate time of marketing.

Table 2.—*Approximate transportation charges on spinach and broccoli shipped by rail from representative shipping points to New York City and Chicago* [1]

Commodity, container, and shipping point	Destination	Minimum carload	Freight rate per 100 pounds	Transportation per car for 15,000 lb. of top ice [2]	Total charges per minimum carload	Approximate cost per package [3]
		Pounds	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Spinach, bushel basket:						
Crystal City, Tex.	New York	17,500	1.69½	17.25	313.88	0.36
Do.	Chicago	17,500	1.36½	15.00	253.88	.29
Norfolk, Va.[4]	New York	17,500	.49	12.75	98.50	.14
Do.[4]	Chicago	17,500	.80	13.50	153.50	.22
Broccoli (crates, 8½ inches by 18 inches by 21⅝ inches inside):						
Castroville, Calif.	New York	20,000	1.84	19.50	387.50	1.02
Do.	Chicago	20,000	1.43	17.25	303.25	.80
Elsa, Tex.	New York	24,000	1.50	18.00	378.00	.84
Do.	Chicago	24,000	1.20	15.75	303.75	.68

[1] These rates as of October 1940 are presented only to give an idea of the approximate transportation costs. For exact information the transportation agencies should be consulted.

[2] The cost of transportation of top ice varies with the quantity used.

[3] Billing weights vary somewhat among States and with type of load and pack. These costs are based on the assumption that minimum loads were as follows: Spinach—Texas, 875 bushels; Virginia, 700 bushels. Broccoli—California, 380 crates; Texas, 450 crates.

[4] These rates on spinach from Norfolk, Va., also apply to kale and collards.

Most spinach produced and marketed in the United States is of the savoy or curly type, but large quantities of flat-type spinach are grown in some areas. Most of the plantings in the State of Washington are of the flat type which is frequently called broadleaf. Characteristic plants of each type are illustrated in figure 1. A plant known as New Zealand spinach is grown in many places, but has relatively little commercial importance. It is a branching, low, bushy-growing plant.

Texas is, by far, the leading State in the production of spinach for the fresh market. Virginia also is important. The commercial production by States, groups, and years for 1931–40 is shown in table 3.

LEFT, BPI 58151; RIGHT, BPI 46939

FIGURE 1.—Commercial types of spinach: *A*, Typical plant of Viroflay variety, a widely grown flat type or broadleaf type; *B*, typical plant of Bloomsdale Savoy variety, a widely grown curly type.

In addition to the States listed, there is some production in New York, Michigan, Ohio, and a number of other States.

In 1939, 69 percent of the United States carlot shipments of spinach originated in Texas; and 21 percent in Virginia. The leading carlot shipping point for spinach in 1939 was Eagle Pass, Tex., with 1,556 cars. Crystal City, Tex., was second with 923 cars; and Norfolk, Va., third with 697 cars.

The total United States commercial spinach crop for marketing fresh has varied considerably from year to year. The trend in production was downward from 1931–35, then sharply upward till 1937. In the 3 years 1938–40, production was below that of 1937. The Virginia fall crop increased irregularly from 1931 to 1939, but fell off in 1940. In the last 3 years of the period, Texas production was much below the 1931–37 average.

Carlot shipments of spinach in 1940 amounted to 5,970 cars for the United States. This number compares with 6,330 cars in 1939, 6,835 in 1938, and 7,788 in 1937. Very small quantities that moved by boat are included. Truck-shipment figures are not available.

Relatively small quantities of spinach are shipped in cars of mixed vegetables and are not here included.

TABLE 3.—*Commercial production of spinach for market by States, groups, and years, 1931–40* [1]

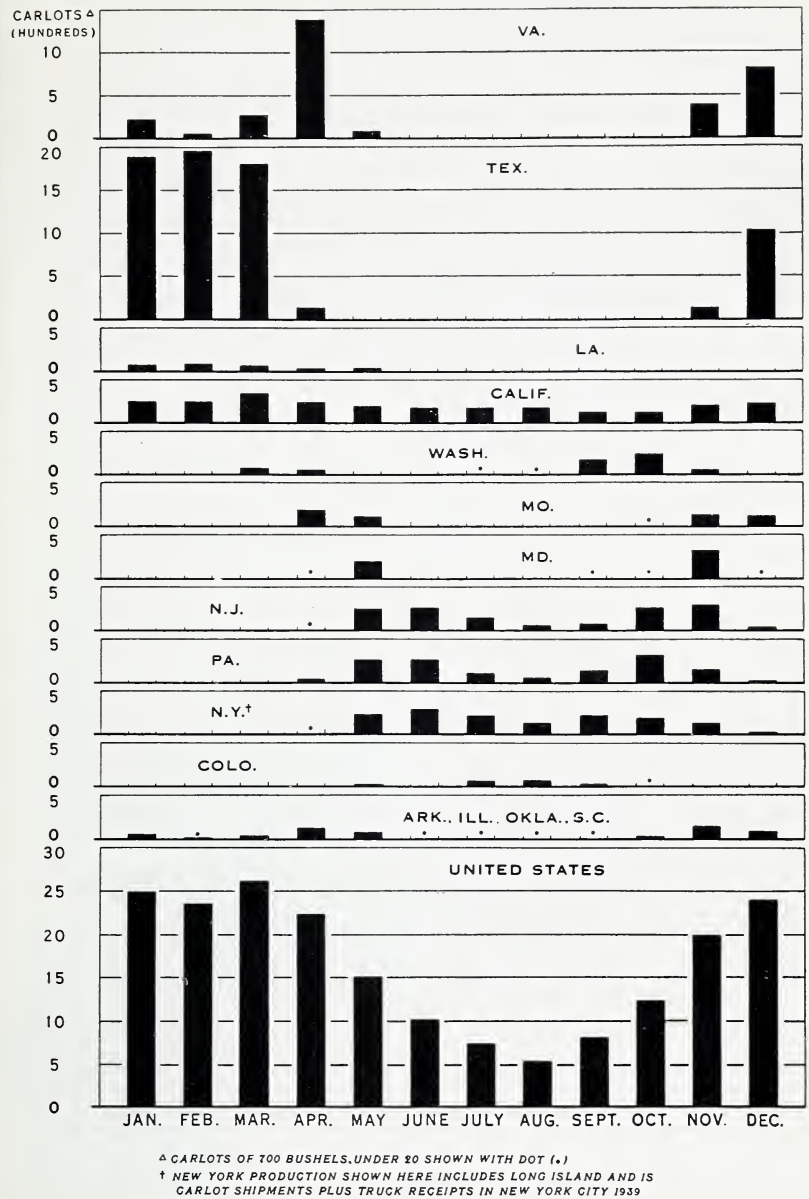
Group and State	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
	1,000 bu.	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*
Fall:[2]										
Virginia	180	297	588	324	418	754	945	972	1,020	600
Early:										
California	760	618	845	800	1,189	1,384	1,392	1,526	1,950	1,648
Louisiana	105	102	126	142	85	122	170	212	198	157
North Carolina	16	18								
South Carolina	80	30	20	40	40	120	30	40		
Texas	7,074	6,468	5,720	6,035	3,780	6,000	7,000	4,800	4,956	4,644
Group total	8,035	7,236	6,711	7,017	5,094	7,626	8,592	6,578	7,104	6,449
Second early:										
Arkansas	150	63	71	96	200	340	141	120	133	90
Illinois	40	23	5	30	32	26	16	9	14	13
Maryland	315	210	108	88	264	147	132	120	180	200
Missouri	350	310	253	200	160	192	220	190	250	264
New Jersey	408	400	440	630	518	315	438	560	400	324
Oklahoma					40	88	120	36	30	81
Pennsylvania	405	292	330	341	302	300	324	480	480	510
Virginia	2,100	875	1,140	575	886	896	1,254	1,258	1,260	1,482
Washington	96	72	53	57	45	100	75	108	72	98
Group total	3,864	2,245	2,400	2,017	2,447	2,404	2,720	2,881	2,819	3,062
Intermediate:										
Colorado	[3] 75	[3] 91	89	73	92	145	158	191	125	[3] 188
Late:										
Arkansas				88	60	100	125	70	35	80
Illinois	34	63	126	176	88	140	160	96	28	21
Maryland	200	220	122	157	189	180	60	407	100	270
Missouri	58	384	250	420	160	250	300	225	160	199
New Jersey	595	800	700	632	1,060	588	585	392	665	630
Oklahoma				200	128	330	500	160	116	60
Pennsylvania	360	350	400	300	312	513	732	304	700	646
Washington	126	132	160	120	140	100	204	280	403	309
Group total	1,373	1,949	1,758	2,093	2,137	2,201	2,666	1,934	2,207	2,215
Total	13,527	11,818	11,546	11,524	10,188	13,130	15,081	12,556	13,275	12,514

[1] Includes undetermined quantities used for processing in some of the minor States. Estimates are in terms of bushels of approximately 18 pounds.
[2] Harvesting of the fall crop starts in fall preceding the year shown.
[3] Includes some quantities not harvested on account of market conditions.

COMPETITION AMONG STATES IN TIME AND VOLUME OF SHIPMENTS

Records of rail shipments of spinach by States of origin and months in 1939 are shown in table 4. This does not give a complete picture of competition in time and volume of movement because of large quantities marketed by truck in some areas. For some States, as Texas, where truck shipments are small, it indicates volume of shipments and time of movement fairly well.

The competition among States in time and volume of movement to market of fresh spinach is shown graphically in figure 2. In this illustration the average reported commercial production for market in 1938 and 1939 is distributed by States and months in proportion to the rail and estimated truck shipments. Texas and Virginia are the chief sources of supply in the late fall, winter, and early spring. For the United States as a whole in 1939, approximately 70 percent of the fresh spinach was marketed from November to April inclusive. March was the month of heaviest movement.



△ CARLOTS OF 700 BUSHELS. UNDER 20 SHOWN WITH DOT (•)
† NEW YORK PRODUCTION SHOWN HERE INCLUDES LONG ISLAND AND IS CARLOT SHIPMENTS PLUS TRUCK RECEIPTS IN NEW YORK CITY 1939

AMS 473

FIGURE 2.—Spinach: Commercial crop production for market, average for 1938–39, distributed by States and months on basis of estimated marketings. Over half of the commercial spinach for market is produced in Texas and Virginia. Heaviest movement to market in the United States is from November to April when Texas and Virginia are shipping.

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TABLE 4.—*Rail shipments of spinach by States of origin and months, 1939* [1]

State of origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Texas	1,168	1,218	1,149	67							68	681	4,351
Virginia, Norfolk district	21	1	116	773	25						83	170	1,189
Virginia, Eastern Shore	3	1			18						49	60	131
California	3		1										4
Arizona	2											1	3
Arkansas		4	14	65	39							1	123
Louisiana		3	7										10
Washington			4	1			3	9	34	37	30		118
Oklahoma			2	4	18							1	25
Missouri				34	22					1	12	10	79
Kansas				2									2
Colorado					3	1	13	36	6				59
Maryland					5						1		6
New Jersey					3	1							4
New York						17	31	57	102	1	1	1	210
Michigan									2	5	1		8
Minnesota										2			2
Pennsylvania											6		6
Total	1,197	1,227	1,293	946	133	19	47	102	144	46	251	925	6,330

[1] In addition to shipments here shown, there was some spinach included in carlot shipments of mixed vegetables.

Some spinach is received on the markets, especially during the spring and summer months, from nearby or market garden areas and is not included in the commercial production shown in figure 2.

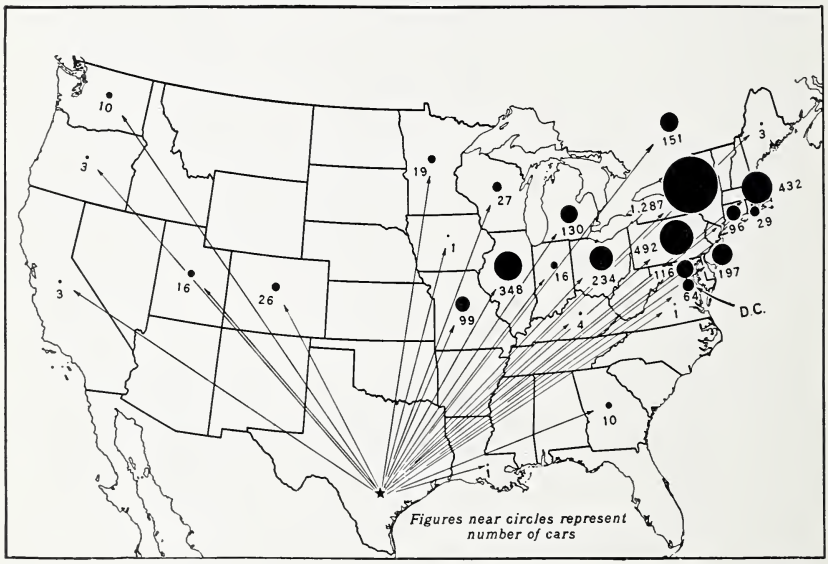


FIGURE 3.—Destinations by States of 3,815 cars of Texas spinach (over 90 percent of carlot shipments) December 4, 1939–April 15, 1940. New England and the Middle Atlantic States together received nearly two-thirds of the Texas carlot spinach shipments. New York State, principally New York City, took nearly one-third. The distribution data here shown are based on passing reports at certain railroad diversion points and unload reports in certain cities. The data are probably slightly incomplete particularly for some of the West Central States.

Distribution of Shipments and Sources of Market Supplies

Competition among producing States is affected not only by time and volume of shipments but also by the extent and location of the territory in which the crop is normally marketed.

Spinach from Texas is marketed over a wider area than that from any other State. Most of the Texas shipments go to the Middle Atlantic, New England, and East North Central States (fig. 3). New York State, principally New York City, receives nearly a third of the Texas shipments. A very large part of the Texas shipments are made by rail. Only small quantities are moved by truck.

No information is available on primary destinations of spinach shipments from States other than Texas. Reports on market receipts by States of origin indicate that spinach produced in Virginia is marketed largely in the Middle Atlantic States and New England with some shipments going as far west as Chicago and St. Louis. New York City is the leading market for Virginia spinach (table 5). In 1940 nearly 70 percent of the Virginia spinach received in New York City came by truck. The corresponding figure for Philadelphia was 85 percent.

Table 5.—*Sources of annual spinach supply in 10 markets, 1939–40 average*

Market	Supply,[1] 1939–40 average	Proportion from specified sources											
		Virginia	New England States	Middle Atlantic States, Delaware, and Maryland	Texas	Illinois, Michigan, Indiana, Ohio, Wisconsin	Missouri, Arkansas, Oklahoma, Kansas	Georgia, Alabama, North Carolina, South Carolina	Louisiana	California	Washington	Others and unspecified	Total
	Carloads	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Boston	1,400	19	44	6	31	------	(2)	------	(2)	------	------	------	100
New York	5,094	23	1	52	24	(2)	(2)	(2)	------	------	------	(2)	100
Philadelphia	1,616	26	(2)	52	21	1	------	(2)	------	------	------	(2)	100
Atlanta	91	2	------	------	25	25	3	39	------	------	------	6	100
Chicago	977	1	------	(2)	39	34	15	------	(2)	------	9	2	100
St. Louis [3]	183	1	------	------	60	12	26	------	------	------	------	1	100
Kansas City	116	------	------	------	10	------	90	------	------	------	------	------	100
New Orleans	150	------	------	------	1	------	------	------	99	------	------	------	100
Los Angeles	1,298	------	------	------	------	------	------	------	------	100	------	(2)	100
San Francisco	564	------	------	------	(2)	------	------	------	------	100	------	------	100

[1] Includes rail and boat unloads and reported truck receipts.
[2] Less than 0.5 percent.
[3] Supply for 1940 only.

Spinach grown in Illinois and other North Central States is very largely marketed in cities in this region, although during the fall months, there is a considerable movement to the South. Other States, including California, market their spinach mostly in areas within a few hundred miles of the producing districts (table 5).

Further information on competition with respect to source of supplies on certain markets by time of year and volume of receipts is shown in table 6. This indicates that in the winter and spring months, Texas and Virginia compete in the eastern markets, whereas Texas

largely supplies the middlewestern cities. Local spinach in the North is available from April to November. California spinach is available in the markets of that State throughout the year.

TABLE 6.—*Unloads of spinach, including rail, boat, and truck receipts at four representative markets by months and States of origin, 1939* [1]

Market and State of origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Carlots	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*
New York City:													
Texas	295	341	404	24								128	1,192
Virginia	76	28	72	525	63						90	259	1,113
Long Island, N. Y				3	226	235	154	41	46	153	114	28	1,000
New Jersey				3	166	197	112	38	47	152	139	16	870
New York other than Long Island					10	49	67	85	175	46	28	4	464
Pennsylvania				20	77	59	22	18	41	110	62	5	414
Maryland					47				2	1	17		67
Massachusetts						1	11	1	1	2	6		22
Others [2]		1		1	12	5	2	17	5	1	2	1	47
Total	371	370	476	576	601	546	368	200	317	465	458	441	5,189
Atlanta:													
Georgia		2	4	7	6	2	1	1				2	25
Indiana									1	9	10		20
Texas	5	5	5									3	18
Alabama		1	3	5								1	10
Others [3]	2		2	1		1				3	4	4	17
Total	7	8	14	13	6	3	1	1	1	12	14	10	90
Chicago:													
Texas	92	92	109	27	10						4	62	396
Illinois				3	35	57	14	1	4	22	22	1	159
Washington				3				8	17	42	45	2	117
Missouri				20	29	1					28	23	101
Michigan						1	17	21	22	10	2	1	74
Arkansas			5	21	7								33
Indiana					8	11			1	2			22
Ohio					1	5	4		3	3			16
Others [4]			4	8	14		4	5	4	1	1	1	42
Total	92	92	118	82	104	75	39	35	51	80	102	90	960
Los Angeles:													
California	123	118	183	136	100	92	90	98	69	58	[5] 100	123	1,290

[1] Quantities in this table are slightly incomplete because of lack of full information on motortruck receipts. In New York, 63 percent of the reported receipts were by truck, compared with 84 in Atlanta, 36 in Chicago and 100 percent in Los Angeles. Relatively small quantities of spinach were received in cars of mixed vegetables and are not here included.

[2] Includes Arkansas, Colorado, Missouri, Oklahoma, Washington, Connecticut, Ohio, and South Carolina.

[3] Includes Virginia, Arkansas, Kentucky, Michigan, Missouri, North Carolina, South Carolina, and Tennessee.

[4] Includes Arizona, Colorado, Kansas, Louisiana, New York, Oklahoma, Virginia, Tennessee, and Wisconsin.

[5] Includes two carlots from Arizona.

HARVESTING

Spinach should be harvested when the plants have generally attained good size and are well developed, but before there is appreciable development of seed stems or discoloration of the older leaves. Generally, most of the plants in a field attain or closely approach the desired stage of maturity at about the same time, so that the area may be harvested entirely at one cutting. In some instances, where a large percentage of plants in a field show a marked variation in the degree of development, two or more cuttings may be advisable. Most cutting for fresh market is done by hand with a large, broad-bladed knife and the plants are severed from the root just below the crown at the surface of the ground. In a few districts, cutting is

done mostly with cultivators equipped with cutting blades which are pulled or pushed along the row and sever the roots of the plants just below the crowns. The plants are usually trimmed, if necessary, after they have been cut and as they are placed in containers in the field. In some places, the plants are run over a grading belt so that they may be trimmed, if necessary, and the defective plants culled out before packing. Trimming consists of removing leaves which are noticeably yellow, brown, diseased, or otherwise defective. Plants which are too defective to be worth trimming may be discarded in the field.

In harvesting plants intended for processing, it is customary to cut above the crown so that the leaves are separated. A tool which is used by some growers for this type of harvesting is a broad, scooplike fork with a V-shaped cutter blade attached to the front of the tines. This, when pushed along the row, cuts off the spinach and gathers it so that it may be placed in a container.

Grading, Packing, and Loading

In some sections, spinach is generally washed before being graded and packed. Local soil and climatic factors are largely responsible for practices which have become established in various districts in regard to washing.

A comparatively new and efficient method of washing is used extensively by some of the larger shippers. A series of three or four screen-belt conveyors carry the spinach plants under water sprays which remove the dirt. Each of these conveyor units is about 10 feet long and is sloped upward. They are integrated by being placed in a row, so that the upper end of one is about a foot above and extending beyond the lower end of the next conveyor. The spinach is carried upward through the spray to the end of the first screen-belt conveyor, from which it drops to the conveyor immediately below, and is finally delivered washed at the end of the last conveyor. The purpose of the drop between conveyors is to turn the plants over so that they will be exposed to the water spray from several directions, and hence more thoroughly washed.

A method of washing which was formerly popular but is now very little used is to dump the plants into a large tank or trough of water, the dirt being removed by water currents or by stirring. The plants are removed from the water with a fork. This method has one objectionable feature in that it usually causes excessive bruising and breakage to the leaves and stems, which not only damages the appearance of the spinach but is conducive to rapid spoilage. Some growers located near their markets pack spinach in the field, then dip the packed baskets in a vat of cold water before shipping.

Spinach that is not washed is usually packed directly in the marketing container while still in the field. Any trimming and sorting that is required is done at that time. If spinach is washed and packed in the packing shed, it may be graded there as it passes over conveyors.

Grade standards for spinach have been established by the United States Department of Agriculture. The standards in effect in 1942 provide for a U. S. No. 1 grade and a U. S. Commercial grade. Copies of the grade specifications may be obtained by request from the

Agricultural Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

The factors of quality that are used in determining grade are: color, including trimming and freedom from discolored leaves; development, including freedom from coarse stalks or seed stems; freedom from insects, dirt and blemishes, freshness and freedom from decay.

The round-bottom bushel basket is the container most widely used for marketing spinach. It is used almost exclusively in the two leading spinach-shipping States, Texas and Virginia. The Los Angeles or western lettuce crate is the principal container used in California and is also used to a considerable extent in northern New York State. In the State of Washington the container generally used is the 20-pound crate. The crates used in the Walla Walla district measure 9½ by 16 by 18 inches, but those in the Puget Sound district measure 7¾ by 16½ by 19¾ inches. A number of other types of containers are used in various markets, especially for local shipments. Among these are the bushel crate, western half crate, bushel hamper, New England bushel box, and various other crates, boxes, and hampers.

In most sections, spinach is not bunched, and very little, if any, attempt is made to arrange the plants in the container, except the top layer. Where bushel baskets are used, the top layer of plants is often packed with butts down and leaves up, in such a way as to produce an attractive appearing face entirely of leaves. Most of the other types of packages used for local marketing are packed with a layer of leaves facing upward in order to improve the appearance. The New England flat bushel box is generally packed with all the plants standing up and crowded together so that only the ends of the longer leaves are exposed at the top. In California, a large percentage of the spinach pack is bunched, and a specified number of bunches are placed in a crate.

The quantity of spinach put in a bushel basket varies generally between 16 and 23 pounds, depending upon the nature of the plants, the tightness of pack, and the amount of ice included. Most packs contain around 18 to 20 pounds of spinach. The quantity in other containers varies with the size of the package, the type of spinach, tightness of pack, and amount of ice used.

Both types of crates used in the State of Washington are usually packed with about 20 pounds. The so-called sandwich pack is used for flat-leaf spinach in some districts of the State. In this pack about 5 pounds of spinach are placed in one-half of the bottom of the crate with the butts against or toward one end. The other half of the bottom of the crate is packed in the same manner with the butts toward the opposite end. From 5 to 10 pounds of crushed ice are then distributed evenly over the layer. Another layer of spinach containing about 10 pounds and arranged like the bottom layer is placed on top of the ice to fill the crate. A parchment paper liner is used in the crate and this is folded over the top before the crate is lidded.

Ice is usually added after the basket has been about half or two-thirds filled with spinach. It may be added with a scoop shovel, a bucket, or a chute which measures out an exact amount. In field-packed baskets it is common practice to take the baskets to an icing point, lift the spinach in the upper portion of the basket, add the

crushed ice, press the spinach back into position and replace the basket lid. In other containers, ice may be added in layers or small pieces of ice scattered between plants. The amount of crushed ice used in bushel baskets usually ranges between 10 and 15 pounds, all of which is generally placed in one spot in the middle of the pack with good results. The gross weight of a heavily packed and iced bushel basket of spinach usually ranges around 40 pounds or a little less.

Available records indicate that more spinach is transported by truck than by rail, except in a few States such as Texas and Washington which are located far from their principal markets. When refrigerator cars are loaded with bushel baskets of spinach, the baskets are generally arranged six rows wide, full length of the car, and alternate baskets are placed upside down to insure even, tight loading. In Texas, a load six layers high containing 864 bushels is usual. In Virginia, a five-layer load of about 700 bushels is common. The carload of Washington crates usually runs between 660 and 675 packages, although it may be more or less. The loading is usually three layers of crates on edge, nine rows wide, with a fourth layer of crates lying flat, six rows wide. A heavy layer of chunk ice is placed on top of the load or crushed ice is blown in over the top of the load, but as a rule no ice is used in the car bunkers. In loading trucks, the stowing depends upon the size and shape of the truck body, but alternate baskets are usually inverted as in refrigerator cars. There is no fixed practice of icing truckloads of spinach, although for long hauls it is a common practice to ship in refrigerated trucks or to ice the top of the load in a manner similar to that used for rail shipments.

Prices

For the United States as a whole, the average season farm price of commercial spinach varied within rather narrow limits during the 10 seasons 1931–40. The low for the period was 36 cents per bushel in each of the 3 years, 1937, 1938, and 1939; and the high was 56 cents in 1935. In Texas, the range in average season farm price for the 10-year period was from 30 to 60 cents per bushel and in Virginia from 40 to 70 cents (table 7). Changes in the average farm price from year to year are apparently not very closely related to changes in estimated commercial production. The average price may be affected considerably by temporary market and crop conditions due to weather or other causes (tables 3 and 7).

Cash prices on carload sales of spinach at south Texas shipping points vary considerably during most seasons. In the four seasons ended March 1940, monthly average f. o. b. prices in south Texas ranged from 33 to 78 cents per bushel. In most months, there was a rather wide range between the low and the high prices (table 8).

During the months when Texas is shipping spinach in large quantities, most of the supply in the important markets arrives by rail. The total number of cars of spinach held on track in 16 markets is reported daily by the market news service. These track holdings are a barometer of supply and if the daily holdings tend to accumulate, city market prices and prices in Texas and other shipping areas are likely to show a downward trend.

TABLE 7.—*Average farm price per bushel of commercial spinach for market by leading States and groups, 1931–40* [1]

State and group [2]	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Virginia (fall crop) [3]	60	60	41	44	70	50	45	40	40	45
Texas [3]	38	46	35	37	58	30	30	30	31	60
Early (including Texas)	38	45	35	37	55	33	34	34	33	56
Second early	36	52	37	42	55	49	42	36	41	37
Intermediate	25	25	40	50	35	45	40	45	45	45
Late	53	42	42	46	57	47	35	42	35	42
All groups	39	46	37	40	56	39	36	36	36	48

[1] Average prices are for the crop season.
[2] For States included in each group see table 3.
[3] Harvesting of the fall crop in Virginia and the early crop in Texas starts in the fall preceding the year shown.

TABLE 8.—*Range and unweighted average prices of savoy type spinach per bushel, for sales in carloads f. o. b. cash, south Texas points, by months, crops of 1937–40*

Crop of—	December		January		February		March		April	
	Range	Monthly average	Range	Monthly average	Range	Monthly average	Range	Monthly average	Range	Monthly average
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1937 (December 1936–April 1937)	32–40	37	32–42	36	30–40	34	32–75	42	30–45	38
1938 (December 1937–April 1938)	60–90	76	38–80	57	30–55	35	30–40	34	32–35	33
1939 (December 1938–March 1939)	40–70	58	35–70	44	35–40	38	35–40	37	-------	-------
1940 (December 1939–March1940)	35–55	41	40–120	78	38–110	74	40–75	56	-------	-------

New York City and Chicago are the two largest markets and prices in these cities are generally indicative of market conditions. Average monthly prices in these two cities and in Los Angeles which is the largest market on the Pacific coast are shown in table 9 for the 4 calendar years, 1937–40. These prices are unweighted averages of the midpoints of daily ranges. Sales are often made in a rather wide range of prices, and the price level often changes considerably during a month, so that the prices shown are only general indicators of the prevailing wholesale prices.

The wholesale price of Texas spinach in New York and Chicago has mostly been between 75 cents and $1 per bushel. The highest monthly average during the 4-year period was $1.36 in February 1940 in New York. Virginia spinach has in many instances sold at slightly lower prices in New York than that from Texas. Prices for spinach from Pennsylvania and other eastern States in New York City and from Illinois and other nearby States in Chicago have mostly averaged between 40 cents and $1 per bushel during the summer and fall months. Spinach from Colorado and from the Adirondack district in New York in recent years has usually sold at relatively high prices (table 9).

Chicago is a market which generally prefers and uses large quantities of flat-type spinach. The prices in table 9 include sales of both savoy and flat type. During certain periods in which prices were reported separately on flat and savoy types in Chicago, the flat type frequently sold at from 5 to 15 cents per bushel more than did the savoy type.

TABLE 9.—*Average wholesale price of spinach, by months, leading States of origin, and containers, New York City, Chicago, and Los Angeles, 1937–40* [1]

NEW YORK

Year, origin, and container [2]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1937:	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Texas bushel	0.84	0.80	0.90	0.80								1.19
Virginia do				.58	0.46					0.44	0.58	1.01
Pennsylvania do					.49	0.63	0.61	0.55		.53	.48	
New Jersey do					.42	.59	.61	.69	1.10	.52	.45	
New York do						.58	.71	.87	1.13	.72		
1938:												
Texas do	1.07	.76	.75									.95
Virginia do	1.07		.64	.48							.58	
Pennsylvania do				.35			.85	1.19	.85	.97	.56	
New Jersey do				.32	.28	.31	.63		.63		.52	
New York do							1.06	1.48	.92	1.23		
New York, Adirondack district bushel									1.43			
1939:												
Texas do	.94	.82	.82									.80
Virginia do	.63	.38	.58	.63	.76						.71	.66
Pennsylvania do				.45	.60	.59	.80	1.00	.64	.32	.58	
New York do						.56	.76	1.12	.93	.32		
Colorado, Los Angeles ½ crate								2.02				
New Jersey bushel									.62	.33	.47	
1940:												
Texas do	1.22	1.36	.95	.74								.87
Virginia do				.54	.52					.58	.66	
Pennsylvania do					.45	.48	.61	.73	.70	.54	.65	
New York do							.58	.99	.84	.53		
New York, Adirondack district, Los Angeles crate								2.17	2.71			
Colorado, Los Angeles ½ crate								1.88				

CHICAGO

1937:												
Texas bushel	0.72	0.78	0.84	0.89							1.02	1.15
Illinois do				.61	0.72	0.28	0.70	0.60	0.78	0.59	.73	
Virginia do					.66						.78	.94
Colorado, Los Angeles ½ crate							1.15	1.13	1.57			
Michigan bushel								.60	.91	.62		
Washington 20-pound crate								1.00	1.52	1.12	1.28	
1938:												
Texas bushel	.90	.70	.72	.94								.88
Illinois do				.82	.53	.30	.64	.67	1.02	.48	.53	
Michigan do							.74	.90	1.10	.54		
Colorado, Los Angeles ½ crate							1.29	1.71	1.87			
Washington 20-pound crate									1.58	1.05	.90	
1939:												
Texas bushel	.78	.68	.73	.72								.79
Arkansas do			.68	.73	.89							
Illinois do					.66	.43	.72			.53	.58	
Colorado, Los Angeles ½ crate								1.32				
Michigan bushel							.88	.71	.67	.59		
Washington 20-pound crate								1.18		1.20	1.33	
1940:												
Texas bushel	1.11	1.31	.82								.91	.82
Illinois do				.68	.60	.28	.43			.40	.78	
Colorado, Los Angeles ½ crate								1.57				
Michigan bushel							.49	.95	.91	.52		
Washington 20-pound crate								1.46	1.21	.78		
New York, Los Angeles crate									2.05			
Virginia bushel											.77	.74

LOS ANGELES

1937:												
Calif. Los Angeles crate [3]	0.98	0.92	0.52	0.71	0.77	0.72	0.69	0.81	0.79	0.87	0.74	0.52
1938:												
Calif. Los Angeles crate [3]	.62	.74	.92	.81	.68	.96	.98	.87	.81	.74	.82	.78
1939:												
Calif. Los Angeles crate [3]	.95	.81	.56	.51	.96	.81	.76	.91	1.14	1.49	.97	.72
1940:												
Calif. Los Angeles crate [3]	1.35	1.30	.58	.66	.80	.67	.70	.94	.83	.88	1.06	1.48

[1] Prices are unweighted averages of midpoints of daily price ranges for stock of generally good quality and condition in less than carlot wholesale quantities. In some instances prices for 1 day each week were used in computing the averages. In many instances, there was a rather wide range in daily prices for certain States.

[2] A bushel of dry spinach usually weighs about 18 pounds. This varies considerably with type of pack and type of spinach. The Los Angeles crate with dimensions of approximately 13 inches by 18 inches by 21⅝ inches contains slightly over 2⅓ bushels of 2,150 cubic inches, disregarding the bulge on the crate pack. The Los Angeles ½ crate has ½ this volume.

[3] Net weight of approximately 35 pounds, containing 4 dozen bunches, mostly from Los Angeles district.

The Los Angeles spinach market is mostly supplied from nearby districts. Wholesale prices of spinach packed in Los Angeles crates with net weight of about 35 pounds and containing 4 dozen bunches ranged mostly from 70 cents to $1 in 1937–40 (table 9). Crates packed with 5 dozen bunches, including receipts from other districts in California, frequently sold at about 25 cents premium over the 4-dozen bunch pack.

Spinach for Processing

California is, by far, the leading State in the production of spinach for processing, including canning and freezing. The official estimates also include data on spinach for processing in Texas, Maryland, Arkansas, and Oklahoma. In addition, some spinach for processing is grown in New York, Missouri, Delaware, Washington, and a few other States. In the 5-year period, 1936–40, the average annual production for processing in California was approximately 29,000 tons or nearly 60 percent of the estimated quantity for processing in the States included in the reports.

The average season price per ton to growers for spinach for processing has, in most years, varied rather widely among States. In the 5 years, 1936–40, the average season price per ton for all States included in the estimates ranged from $13.31 in 1936 to $19.19 in 1940. The average price for the States included in the reports for the 5-year period was $14.62 per ton (table 10).

Table 10.—*Production and average season farm price per ton of spinach for processing, by years and leading States, 1936–40*

PRODUCTION

State	1936	1937	1938	1939	1940	Average, 1936–40
	Tons	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
Maryland	1,400	2,700	3,400	7,400	3,100	3,600
Texas	7,000	10,400	9,600	9,000	5,600	8,320
California	41,500	43,500	20,800	27,500	11,100	28,880
Other States [1]	13,500	8,200	4,800	3,300	11,200	8,200
Total	63,400	64,800	38,600	47,200	31,000	49,000

FARM PRICE

	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Maryland	30.90	27.50	17.90	18.30	26.20	21.94
Texas	8.80	11.00	10.00	15.00	18.00	12.21
California	10.85	13.35	11.95	11.85	13.00	12.12
Other States [1]	21.41	18.54	26.88	27.58	24.02	22.69
Total	13.31	14.21	13.86	14.56	19.19	14.62

[1] Includes Arkansas and Oklahoma.

BROCCOLI (ITALIAN SPROUTING)

Producing Areas

California is the leading source of Italian sprouting broccoli. Other States that produce fairly large quantities are Arizona, Texas, Pennsylvania, New Jersey, New York, Virginia, and South Carolina. Broccoli from Colorado, Washington, North Carolina, Florida, Louisiana, Maine, Illinois, and New Mexico has also been reported

on the wholesale markets in New York or Chicago at some time during the 4 years, 1937–40. Official estimates of broccoli production have not been available. Carlot-shipment reports on broccoli are available beginning with 1939. Since most of the shipments from the eastern States are made by truck, the carlot-shipment record does not give a complete picture of market movement or of producing areas.

Leading carlot shipping points include Castroville, Guadalupe, Santa Maria, and San Jose, Calif., and Phoenix, Ariz.

Competition Among States in Time and Volume of Shipments

Shipments from California, the leading source of broccoli, move to market in quantity from August to May (table 11). The heaviest movement is from November through March. Arizona and Texas both ship from December to March. Shipments from California, Arizona, and Texas are mostly by rail except to nearby markets. United States carlot rail shipments in 1939 totaled 1,758 cars compared with 1,686 cars in 1940. These figures do not include truck movement for which reports are not available, nor do they include some broccoli shipped in cars of mixed vegetables. There was no movement by boat in 1939 according to the reports from carriers.

Table 11.—*Rail shipments of broccoli (Italian sprouting) by States of origin and months, 1939* [1]

State of origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Arizona	26	65	23	-----	-----	-----	-----	-----	-----	-----	-----	2	116
California, Central district	220	145	260	149	71	-----	7	55	62	102	189	316	1,576
North Carolina	-----	2	1	-----	-----	-----	-----	-----	-----	1	-----	-----	4
Texas	24	14	2	-----	-----	-----	-----	-----	-----	-----	-----	20	60
Virginia, Norfolk district	2	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	2
Total, United States	272	226	286	149	71	-----	7	55	62	103	189	338	1,758

[1] In addition to shipments here shown, there was some broccoli included in carlot shipments of mixed vegetables.

A fairly good picture of competition among broccoli producing States in time and volume of shipment may be obtained by comparing receipts, by States of origin and months, in representative cities. Combined rail and truck receipts of broccoli by months in 1939 are shown for New York City, Atlanta, Chicago, and Los Angeles in table 12. New York City has by far the largest receipts of any of the markets, and it draws supplies from nearly all producing areas.

Broccoli is on the New York market every month in the year, but from September to April the monthly supply is larger than during the other months (fig. 4). Pennsylvania, New Jersey, and New York ship by truck to New York City and other eastern markets. They furnish a large part of the supply in this area during the summer and fall months.

California markets are supplied by truck receipts from that State. Broccoli consumption, as indicated by the supplies in representative markets, has increased somewhat during the 10 years ended in 1940 (table 1).

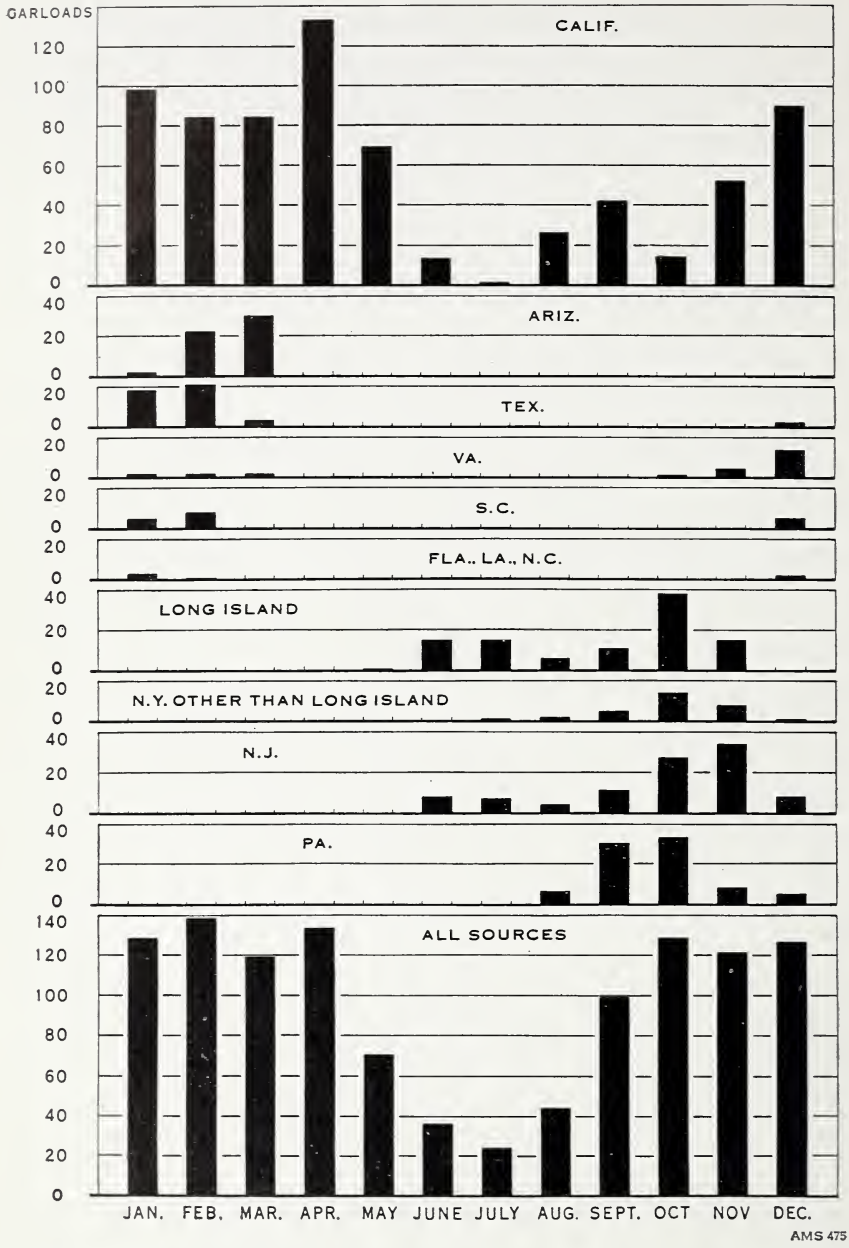


FIGURE 4.—Broccoli: New York City carlot rail, boat, and reported truck unloads, by months and States of origin, 1939. A large part of the broccoli receipts in New York City is in the period from September to May. California is the chief source of supply. Eastern broccoli is received in large quantities during the fall.

Harvesting

Italian sprouting broccoli is ready for harvest when the clusters of the flower buds have become well developed, but should be cut before the individual buds have enlarged and separated to the extent that they are ready to open and expose the yellow petals. This applies equally to the first bud cluster borne at the top of the central stem and the smaller bud clusters produced later on branches of the stem which sprout from the axils of the lower leaves.

TABLE 12.—*Unloads of broccoli received by rail, boat, and truck at four representative markets, by months and States of origin, 1939* [1]

Market and State of origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
New York City:	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*
California	98	84	84	133	69	13	1	26	42	15	52	90	707
Long Island, N. Y.					1	15	15	6	11	38	15		101
New Jersey						8	7	4	11	27	34	8	99
Pennsylvania								6	30	33	8	5	82
Arizona	2	22	30										54
Texas	18	21	3									2	44
New York other than Long Island							1	2	5	14	8	1	31
Virginia	2	2	2							1	4	13	24
South Carolina	5	8										5	18
Others [2]	3	1										2	6
Total	128	138	119	133	70	36	24	44	99	128	121	126	1,166
Atlanta:													
California		1									1		2
Chicago:													
California	20	22	17	30	6	5		2	12	25	31	35	205
Arizona		7	7										14
Others [3]	1	1	1							1		1	5
Total	21	30	25	30	6	5		2	12	26	31	36	224
Los Angeles:													
California	42	33	24	8	2	1		4	15	24	29	33	215

[1] Quantities in this table are in some instances slightly incomplete because of lack of full information on motortruck receipts, also some broccoli shipped in cars of mixed vegetables is not included. In New York, 29 percent of the reported receipts were by truck and in Los Angeles, 100 percent. In Atlanta and Chicago, all reported receipts of broccoli were by rail.

[2] Includes Florida, Louisiana, and North Carolina.

[3] Includes Louisiana, North Carolina, and Texas.

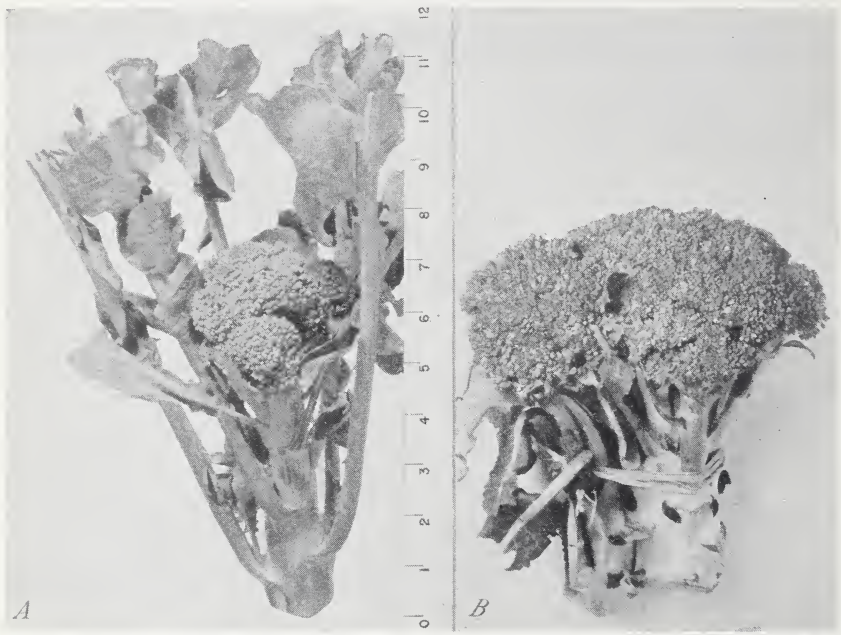
In harvesting, the stalk is usually cut so that the total length of the bud cluster and stem is more than 8 inches. This will allow for subsequent bunching and trimming. A butcher knife or some other heavy knife or cutting tool is most effective in lopping off the stalks in harvesting.

An indeterminate number of cuttings, depending on weather and other conditions, are required in harvesting a field of broccoli. In some instances, cuttings are made from 4 days to a week apart for a period of several months. The first cutting and possibly one or two later cuttings consist entirely of broccoli from the top of the main stems of the plants. These first bud clusters are usually the largest and are commonly called heads. Bud clusters which are usually smaller and are called shoots are borne on branches sent out from the axils of the leaves on the main stem. Owing to the fact that bud clusters from the top of the plant are not always larger than some from the side branches, the terms "head" and "shoot" have been defined in the United States Standards for Broccoli on the basis of diameter of bud clusters. The dividing line between heads and shoots has

been designated in the standards for grade issued October 1, 1940 as 2¼ inches in diameter. Later cuttings will include both top and side bud clusters, giving a wide range of sizes. The last two or more cuttings will probably consist mostly of branch bud clusters which will be predominantly shoots.

Grading, Packing, and Loading

The cut broccoli is placed in field containers and taken to the edge of the field or to the packing shed where it is to be trimmed and



LEFT, AMS 2158; RIGHT, AMS 1768

Figure 5.—Italian sprouting broccoli: *A*, A head as it appears before bunching and final trimming; *B*, a high-quality bunch ready for packing, showing close trimming and compact bud clusters.

bunched (fig. 5). Trimming usually consists of breaking off the large, coarse leaves and leaf stems and removing any discolored leaves. Some packers make a practice of leaving a few large leaves which are folded back and tied in the bunch to help round it out. Bunching is usually done in a moldlike frame with a clamp arrangement. Bunchers become adept at selecting certain stalks from the pile and arranging them together so as to form a rounded bunch of the desired size. When the broccoli stalks are in the proper positions for making the bunch, the clamp is pressed down forcing the stems tightly together. They are then tied in place with a strand of raffia or twine. The final trimming is done by cutting off the base of the stems and plucking off any objectionable leaves which may protrude from the bunch. Labels are sometimes wrapped around the bunches and fastened with rubber bands.

The grade standards for bunched Italian sprouting broccoli issued by the United States Department of Agriculture, effective October 1, 1940, provide for three grades: U. S. Fancy, U. S. No. 1, and U. S. No. 2. Copies may be obtained from the Agricultural Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

The factors of quality upon which the U. S. grades are based are: Color, maturity and compactness of bud cluster, trimming, size and length, freedom from blemishes and insects, freshness and freedom from decay.

It is a common practice to place broccoli stalks with bud clusters of various diameters in the same bunch. Most shippers feel that it is impractical to attempt to grade it for size, as the returns might not justify the additional labor and expense involved. Consequently, the pack of earlier cuttings from a given field is likely to consist chiefly of heads, with the ratio of shoots increasing in the pack of each later cutting, until in the last cutting or two the entire lot consists of shoots.

The pony crate is the most commonly used container for broccoli, being used extensively in California, Texas, Arizona, and to some extent elsewhere. Its size is the same as the crate commonly used for shipping cauliflower from Western States, and has inside dimensions of 8½ by 18 by 21⅝ inches. Other types of containers also are used for marketing broccoli, particularly in the growing areas near large eastern markets. Among these are: A crate of approximately 1 bushel, 11 by 11 by 18 inches; the Eastern lettuce crate, 7½ by 16 by 19 inches; the New York cauliflower crate, 13 by 15 by 21⅝ inches; the 32-quart strawberry crate, 14¾ by 11 by 22 inches; and the western half crate, 9 by 13 by 21⅝ inches.

Bunches of broccoli found in the markets commonly range in weight from a little more than 1 pound up to more than 2 pounds. The tendency is to make the bunches in a package of fairly uniform size. The majority of shipments in pony crates are packed 24, 28, or 30 bunches to the crate. In a 24 pack, the bunches are likely to average about 1¾ pounds or more, whereas in a 28 or 30 pack, the average weight would probably be about 1½ pounds. The eastern lettuce crate and other crates of approximately the same capacity are usually packed with one dozen bunches.

The pony crate is usually lined with heavy waterproofed paper. A generous layer of crushed ice is placed in the bottom of the crate. The first layer of bunches is then put in, followed by another layer of ice, the second layer of bunches and a top layer of ice. There appears to be no generally accepted plan for packing the bunches in the layers, and the arrangement varies depending upon the shipper's ideas as well as upon the count. The amount of crushed ice used in each crate may run as high as 30 or 35 pounds.

When all the broccoli and ice are in the crate, the combined material usually extends well above the top of the crate. In many packing houses, the contents of the crate are built up so high prior to lidding that a metal collar which fits on top of the crate is used to hold up the paper and prevent spilling of the ice. Finally, the extending flaps of the crate liner paper are folded over the top of the ice from four sides; the metal collar is removed, and the crate is ready for lidding. Closing is usually done by a press machine that forces the contents down into the crate making a very tight pack with a bulge of 3 or 4 inches.

Despite the pressure applied to close the crates, the broccoli generally shows very little bruising.

The western half crate and the bushel crate used in the East are usually lined and packed with ice in much the same manner as the pony crate. The New York cauliflower crate and the strawberry crate are usually not lined or iced owing to the fact that they are shipped to nearby markets.

Most of the broccoli shipments from California, Texas, Arizona, and Colorado go by rail, and some rail shipments are made from other districts. The customary practice in loading a car with pony crates is to place crates in the lower layers on their sides so as not to crush the bulge. The usual loading consists of three layers of crates on their sides, seven rows wide, and a fourth layer of crates lying flat, with the

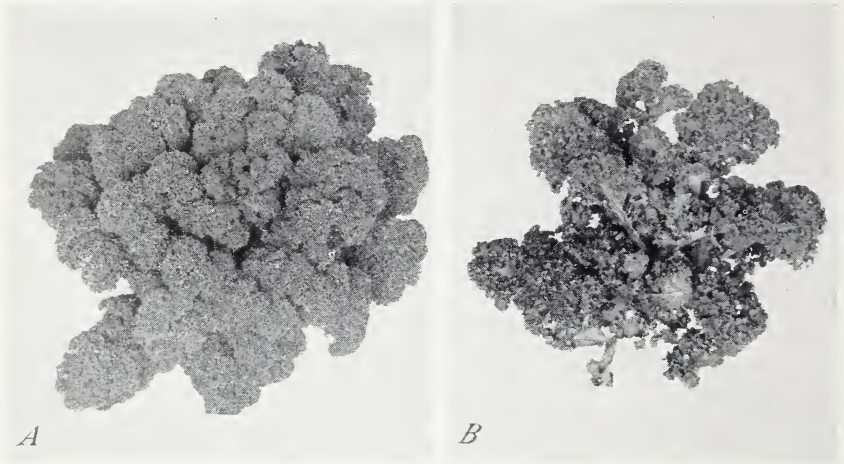


FIGURE 6.—Leading commercial types of kale: *A*, Typical plant of Scotch or green kale; *B*, typical plant of Siberian or blue kale.

bulge up, four rows wide. A car loaded in this manner usually contains about 400 crates. A heavy layer of crushed ice is spread over the top of the load, but the car bunkers are usually not iced.

The method of loading and the number of packages in truckloads vary with the type of container, the size of truck, and other factors. The methods of icing packages and loading depend upon the type of container used and the distance to be hauled. Factors used in converting truck shipments of broccoli to a carlot basis in eastern markets are: 600 bushel crates, 380 New York cauliflower crates.

PRICES

Average wholesale prices of broccoli in New York City and Chicago, by States of origin and by months for 4 years, 1937–40, are shown in table 13. Wholesale prices of pony crates from California, Arizona, and Texas have, in most months during the period, sold within the range of $2 to $3. There has been considerable variation from month to month throughout the season. Since the prices in table 13 are unweighted averages of the midpoints of daily price ranges for stock of good quality and condition, small differences from month

to month, or among States of origin in the same month, may not be significant. Prices of western broccoli have generally been slightly higher in New York City than in Chicago. Reports on prices of broccoli to growers are not available.

KALE

There are many varieties of kale or borecole, but from a marketing standpoint two types are recognized, namely the curly or crinkly leaved kales and the smooth leaved kales. The smooth type is sometimes referred to as spring kale or straight kale. The curly kales are by far the more important commercially, and are usually classified in two groups known as Scotch or green kales and Siberian or blue kales (fig. 6).

TABLE 13.—*Average wholesale price of bunched broccoli, by months, States of origin, and containers, New York City and Chicago, 1937–40* [1]

Market, year, origin, and container [2]	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York City, 1937:	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Arizona, pony crate	2.76	3.28										
California, do	2.52	3.52	2.87	3.74	4.54				3.31	2.90	2.27	2.40
Colorado, do									2.95			
Florida, eastern lettuce crate		2.52	2.10	2.35								
Texas, pony crate	2.26	3.53	2.96									2.14
Nearby, crate, 1 dozen bunches						1.81	1.75	1.57	1.42	1.46	1.16	.95
New York City, 1938:												
Arizona, pony crate	2.62	3.04	3.11									3.05
California, do	2.42	2.82	2.78	2.68	2.80			3.47	3.34	2.47	2.02	3.34
Colorado, do								3.22				
Florida, eastern lettuce crate	1.81	2.09	2.02									
Texas, pony crate	2.00	2.30	2.00	1.60								2.86
Nearby, crate, 1 dozen bunches						1.57	1.52	1.42	1.63	1.22	.90	
New York City, 1939:												
Arizona, pony crate	2.63	2.55	3.00							3.03	3.06	3.19
California, do	2.62	2.55	3.37	2.54	2.97	2.41		3.18	2.50	3.21	3.05	3.08
Texas, do	2.21	2.28	2.97									2.22
Nearby, crate, 1 dozen bunches							1.90	1.27	.99	1.19	1.44	
New York City, 1940:												
Arizona, pony crate	2.42	3.73	3.21									3.41
California, do	2.20	3.30	3.03	4.15	3.26	2.91	2.98	3.42	3.09	2.02	2.58	3.18
Texas, do	2.01	3.28	2.99									2.44
Virginia, do	1.92				2.80							2.67
Nearby, crate, 1 dozen bunches						1.82	1.40	.99	1.10	1.12	1.03	
Chicago, 1937:												
Arizona, pony crate		2.69										
Colorado, do								2.11				
California, do	2.25	2.89	2.26	2.84	2.75	2.33		2.21	2.92	2.50	1.95	1.87
Texas, do	1.89	2.80	2.29									
Nearby, bundle (3–6 pounds)							.13	.09				
Chicago, 1938:												
Arizona, pony crate		2.48	2.41									
Colorado, do								2.36	2.19			
California, do	2.00	2.37	2.27	1.99	1.95	1.58		2.46	2.66	2.14	1.80	2.55
Texas, do	1.88	2.25										
Washington, do									2.45	2.13		
Nearby, bundle (3–6 pounds)							.11	.09				
Chicago, 1939:												
Arizona, pony crate	2.10	2.20										
California, do	2.03	2.11	2.88	2.06	2.36			2.53	2.31	2.73	2.62	2.55
Louisiana, do												2.00
Texas, do	1.80	2.00										2.12
Chicago, 1940:												
Arizona, pony crate	2.00											
California, do	2.10	2.73	2.56	3.47	2.59	1.98		2.48	2.49	1.69	2.65	2.67
Colorado, do								2.06				
Texas, do	1.90	2.40	2.55								2.82	2.05
Nearby, bundle (3–6 pounds)							.17					

[1] Unweighted averages of midpoints of daily price ranges for stock of good quality and condition in less than carlot wholesale quantities.

[2] The pony crate shown in these tabulations is 8 inches by 18 inches by 21⅝ inches inside dimensions, usually containing 30, 28, or 24 bunches of Italian sprouting broccoli. Bunches generally range in weight from 1½ to 2 pounds. The eastern lettuce crate is 7½ inches by 16 inches by 19 inches. California prices, are mostly on bunches of heads or mixed heads and shoots. In a few instances, when the bunches consisted entirely of shoots, the prices were slightly lower than on heads or heads and shoots and were excluded from the tabulation.

The Scotch kales tend to have an extremely curled, wrinkled, and finely divided leaf and most varieties have a bright green to yellowish green color. The Siberian kales have leaves usually flattened and smooth in the centers with curled and ruffled edges, and they are of a deep, bluish green color. The smooth-leaved kales, as the name implies, have leaves with relatively little curl or crinkle, and with the exception of the type called hanover salad are usually marketed in the late spring and early summer.

Producing Areas, Production, and Competition

A large part of the kale produced for shipment to market is grown in the Norfolk district of Virginia and in New Jersey and Long Island, New York. Estimates of commercial production are available only for the Norfolk district, where the crop in the decade ended in 1940 varied from 1,080,000 bushels in 1932 to 243,000 bushels in 1940. In the last half of the decade, production averaged considerably less than in the first half (table 14). Some kale is produced in the market garden and commercial areas in other States. Carlot shipments of kale are not reported separately. They are included in the carlot shipment reports with other greens.

In the New York City report on unloads, kale is segregated by States of origin and months. Kale from Virginia is marketed principally from December to April. Long Island and New Jersey kale is marketed mostly from May to December (table 15). Some Virginia kale is shipped to Chicago and other middle western markets, but a large part of the production in Virginia and the Middle Atlantic States is marketed in Middle Atlantic cities.

Harvesting

Kale is usually grown in rows; and when a sufficient number of the plants have attained a suitable size, harvesting is begun. Cutting is generally a hand operation, the cutters using a large butcher knife, walking along the row and cutting the plants which are ready. The plants are placed in containers, usually bushel baskets, although other containers such as barrels may be used.

The necessary trimming is usually done as the plants are picked up. When they are in a vigorous condition, and have not been exposed to excessive heat, extreme cold, or been under water, there will probably be no need for trimming. If the plants have any outer leaves which are yellowed or turning brown, the affected leaves are broken off.

Grading, Packing, and Loading

Owing to the practice of cutting only the plants considered suitable for marketing, practically no grading is done other than the trimming off of defective leaves previously mentioned. Standards for grade for kale have been established by the U. S. Department of Agriculture, and may be obtained upon request from the AgriculturalMarketing Administration, Washington, D. C. Probably the most important factor of quality is uniformity and attractiveness of color. Other important factors are development and compactness of plant, trimming, freshness, freedom from insects, blemishes, and decay.

TABLE 14.—*Commercial production of kale for market and average farm price per bushel, Norfolk, Va., district, 1931–40*

Item	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940
	1,000 bu.	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*	*1,000 bu.*
Production	480	1,080	900	330	342	358	430	514	550	243
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Price per bushel	50	20	35	40	35	30	30	30	25	40

TABLE 15.—*Unloads of kale received by rail, boat, and truck at New York City market, by months and States of origin, 1939* [1]

Market and State of origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
New York City:	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*	*Car-lots*
Virginia	106	65	89	30	6						3	51	350
Long Island, N. Y.	2			4	38	18	23	12	23	51	52	37	260
New Jersey				1	16	14	20	10	12	33	33	11	150
New York, other than Long Island						1	7	5	5	16	16	3	53
Others			1	6									7
Total	108	65	90	41	60	33	50	27	40	100	104	102	820

[1] Quantities in this table are in some instances slightly incomplete because of lack of full information on motortruck receipts. For the year, 76 percent of the reported kale receipts in New York of 820 carlots were shipped by truck.

In most cases kale is not washed, but some lots are washed by being run over a spray-type conveyor such as described in the section devoted to spinach.

The leading container for kale is the round-bottom bushel basket. Some kale, however, is shipped in the basket barrel, a container of approximately the size and shape of the standard apple barrel, with a capacity of about 3 bushels. Its sides are of spirally arranged, interwoven strips of veneer wood bound with hoops at each end, and there are small spaces between the strips. The bottom of the barrel is tight woven or a solid piece, while the top is left open and is usually covered with a piece of burlap or cotton cloth.

When the kale is not washed, it is packed directly into the shipping containers while in the field. Owing to the bulky nature of the plants, it is necessary in packing to press them down into the container. Usually no attempt is made to arrange the plants in the package except that the top layer is generally placed butts down and leaves up to make an attractive face. A packed basket will usually contain from 20 to 25 pounds of kale.

Baskets and barrels of kale are usually iced unless intended for strictly local market. Whether the kale is packed in the field, or in the packing houses after washing, the ice is added in the packing house. About 5 to 8 pounds of crushed ice are used in a bushel basket. If the kale has been field-packed, plants in the upper part of the package are raised, and the ice placed in the center of the package.

Kale is shipped mostly by truck although large quantities move by rail. When it is packed in bushel baskets and loaded into refrigerator cars, the loading is usually the same as for spinach. The baskets are stowed six rows wide with alternate baskets turned upside down, and

the load is generally six layers high. Usually a layer of chunk ice is spread over the top of the load, but no ice is used in the car bunkers. Methods of loading trucks vary, but the practice of inverting alternate baskets and top icing is usually followed in long-distance shipments as in the case of car loading. A carload usually contains about 700 bushel baskets.

Prices

The average season farm price of kale in the Norfolk district of Virginia varied during the period 1931–40 from 50 cents per bushel in 1931 to 20 cents in 1932 (table 14). In New York City, the wholesale unweighted average monthly price of Virginia kale during the 4 years 1937–40 varied from 87 cents to $1.77 per barrel and from 28 cents to $1.05 per bushel. In Chicago, the range for Virginia stock was from 32 to 99 cents per bushel (table 16).

GREENS OTHER THAN SPINACH, BROCCOLI, AND KALE

In addition to spinach, broccoli, and kale, there are a number of greens for which official estimates of production are not available, but which are of considerable importance in the markets. These include rape, so-called broccoli rabe, brussels sprouts, collards, dandelions, turnip tops, hanover salad, mustard greens, Swiss chard, beet tops, cabbage sprouts, and a few others. These miscellaneous greens comprised 27 percent of the total reported supply of greens in eight important markets in 1938–40. There is some confusion by the trade in the classification of some of these greens particularly turnip tops, broccoli rabe, and mustard greens.

Rail- and boat-shipment reports are available on these miscellaneous greens combined. These shipment reports include kale but do not include spinach or Italian sprouting broccoli. The leading States in rail shipments of greens exclusive of spinach and broccoli are Virginia and California. Small quantities were also shipped from eight other States in 1939. Rail shipments of greens other than spinach and broccoli totaled 1,513 cars in 1939 and were heavy from November to March (table 17).

In addition to shipments reported as greens, the heavy shipments of mixed vegetables from some States include rather large quantities of greens. An analysis of records of mixed-vegetable shipments from Texas in 1939 indicated that the following products were included: Broccoli, collards, dandelions, mustard, spinach, and turnip greens. Collards and mustard were included in mixed-vegetable shipments from Louisiana in 1937–38.

Market-receipt reports on greens including truck-receipt reports give some information on producing districts in addition to that shown in the carlot-shipment reports. In most markets where motortruck-receipt reports are available, a number of these miscellaneous greens are combined under the term "others" in the reports. In the New York City reports of receipts by truck, rail, and boat, most of the miscellaneous greens have been reported separately. Table 18 shows for New York City and a few other markets the unloads of certain greens including rail, boat, and truck receipts at wholesale and farmers' markets and at some chain-store warehouses by months

TABLE 16.—*Average wholesale price of kale, by months, States of origin, and container, New York City and Chicago, 1937–40* [1]

NEW YORK

Market, year, origin, and container	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1937:	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Virginia barrel	0.95	0.87	1.06									1.25
Virginia bushel basket	.38		.59								0.40	.50
Nearby do					0.21	0.37	0.25				.32	.32
1938:												
Virginia barrel	1.34	1.56	1.10								1.38	1.06
Virginia bushel basket	.47	.59	.41	0.35							.55	.39
Nearby bushel				.16	.21	.29			0.42	0.32	.36	.25
1939:												
Virginia barrel	1.03	.89	.90									
Virginia bushel basket	.32	.28	.31	.46								.42
Nearby bushel					.38					.27	.29	
1940:												
Virginia barrel	1.77											1.00
Virginia bushel basket	.71	.86	1.05	.69							.36	.39
Nearby bushel					.28	.34				.33	.31	.28

CHICAGO

1937:												
Virginia bushel basket	0.66	0.58	0.60								0.60	0.56
Illinois do									0.32	0.36	.32	.22
1938:												
Virginia do	.64	.66	.61	0.35							.85	.63
Illinois do									.32	.27	.34	.35
1939:												
Virginia do	.58	.54										.65
Illinois bushel										.39	.40	
1940:												
Virginia bushel basket	.80	.99									.62	.61

[1] Prices are unweighted averages of midpoints of daily price ranges for stock of generally good quality and condition in less than carlot wholesale quantities. In some instances, prices for 1 day each week were used in computing monthly averages.

TABLE 17.—*Rail shipments of greens other than spinach and broccoli by States of origin and months, 1939* [1]

Origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Virginia, Norfolk district	162	161	179	45	9						6	78	640
Virginia, Eastern Shore	4									1	8	21	34
California, Central district	110	58	26					5	32	70	139	161	601
California, Imperial Valley	61	34									23	25	143
California, Southern district	36	3	8										47
Florida	1	2										2	5
Texas	3	2											5
Arizona	1												1
Mississippi		1	14	10								2	27
South Carolina		2											2
Alabama			1										1
Georgia				3									3
North Carolina											1	3	4
Total	378	263	228	58	9			5	32	71	177	292	1,513

[1] Includes boat shipments in terms of carloads as follows: Virginia, 196; Florida, 2. In addition to the shipments here shown some miscellaneous greens were included in carlot shipments of mixed vegetables.

and States of origin in 1939. Greens produced in areas in the Middle West, South, and other regions, are not well represented in table 18 because of lack of complete data on receipts of each kind of green.

A large part of the greens shown in table 18 was brought to market by truck. For New York City this ranged from 60 percent for brussels sprouts to 95 percent or more for broccoli rabe, dandelions

TABLE 18.—*Unloads of specified greens received by rail, boat, and truck at representative markets by months and States of origin, 1939* [1]

BRUSSELS SPROUTS

Market and origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	Carlots	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*
New York:													
California	38	16	12						3	2	13	31	115
Long Island, N. Y.	2								1	25	58	36	122
New York, other than Long Island								1	12	20	3		36
Connecticut									7	11	2		20
Total	40	16	12					1	23	58	76	67	293
Chicago:													
California	27	9	10	1				1	6	4	23	33	114

COLLARDS

New York:													
Virginia	48	46	42	23	17						3	27	206
Long Island, N. Y.						3	1	11	16	48	36	14	129
New Jersey						1		5	15	38	27	6	92
New York, other than Long Island								2	3	11	15		31
Others		3		3									6
Total	48	49	42	26	17	4	1	18	34	97	81	47	464
Atlanta:													
Georgia	30	33	7	7	7	8	4	6	11	20	20	29	182
Florida	7	1	3										11
Alabama										3	8	5	16
Others	3		1					1					5
Total	40	34	11	7	7	8	4	7	11	23	28	34	214

DANDELIONS

New York:													
New Jersey			14	50	28	13	12	21	13	23	20	3	197
Long Island, N. Y.			2	10	32	17	15	10	9	26	26	8	155
New York, other than Long Island					5	4	6	14	12	14	14	2	71
Others	1	3	1	1							1	5	12
Total	1	3	17	61	65	34	33	45	34	63	61	18	435

HANOVER SALAD

New York:													
Virginia		1	4	2	6						1	4	18

MUSTARD GREENS

New York:													
California	4	8	2										14
Long Island, N. Y.					1	8	11	26	20	37	33	4	140
New Jersey					3	6	9	20	14	25	22	2	101
New York, other than Long Island							4	17	8	9	11		49
Others		2		1	1								4
Total	4	10	2	1	5	14	24	63	42	71	66	6	308
Los Angeles:													
California	21	22	31	26	21	22	17	13	15	20	26	22	256

[1] Quantities are in some instances slightly incomplete because of lack of full information on motortruck receipts. The proportions of motortruck receipts included in the quantities shown are as follows: New York City, brussels sprouts, 60 percent; collards, 69; dandelions, 99; hanover salad, 89; mustard greens, 95; broccoli rabe, 98; Swiss chard, beet tops, and borage (barrach), each 100; Atlanta, collards, 100; Los Angeles, mustard greens and Swiss chard, each 100 percent.

TABLE 18.—*Unloads of specified greens received by rail, boat, and truck at representative markets by months and States of origin, 1939*[1]—Continued

BROCCOLI RAPE (INCLUDING TURNIP TOPS)

Market and origin	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
New York:	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*	*Carlots*
Virginia	2	46	192	44	5						1	1	291
North Carolina	3	11	20								5	6	45
South Carolina	15	3	10								9	39	76
New Jersey			2	41	18	9	2	3	2	8	9	1	95
Delaware			1	6									7
Long Island, N. Y				2	17	17	4	1	1	11	10	3	66
Maryland				1									1
New York, other than Long Island					1			2	1	3	3		10
Connecticut					2								2
Total	20	60	225	94	43	26	6	6	4	22	37	50	593

SWISS CHARD

New York:													
New Jersey					2	26	41	42	30	41	23		205
Long Island, N. Y					2	22	40	37	25	47	26	1	200
New York, other than Long Island					1	6	14	24	9	17	13		84
Total					5	54	95	103	64	105	62	1	489
Los Angeles:													
California	1		1	1	1	1		1	1	1	1	1	10

BEET TOPS

New York:													
New Jersey						2			1				3
Long Island, N. Y						2			1				3
New York, other than Long Island						1							1
Total						5			2				7

BORAGE (BARRACH)

New York:													
Long Island, N. Y					2	7	3	3	2	3	11	1	32
New Jersey					1	3	2	1	3	2	9	1	22
New York, other than Long Island											4		4
Total					3	10	5	4	5	5	24	2	58

mustard greens, Swiss chard, beet tops, and borage. Truck receipts of these greens, except brussels sprouts, were converted to a carlot basis as shown in table 18, at 700 bushels per carlot. In New York City in 1939, about 60 percent of the receipts of these miscellaneous greens were on the farmers' markets.

Market receipts of miscellaneous greens are usually somewhat heavier in March, April, October, and November than in other months.

Brussels Sprouts

The brussels sprout plant is closely related to our common cabbage. It has been bred and selected for the characteristic of developing large, rounded buds generally from 1½ to 2 inches in diameter in the axils of the leaves along the stalk as shown in figure 7. Only the buds or

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Figure 7.—Brussels sprouts plant. Most of leaves have been removed to show development of buds or sprouts in axils of leaves along entire stem.

sprouts are harvested, the main stalk and its large leaves being undesirable.

California is the leading source of supply for brussels sprouts. Receipts from California are on most of the large markets from November to March. California and New York, including Long Island, were the chief sources of supply in New York. In Chicago, all reported receipts in 1939 were from California, but local truck-receipts reports were incomplete (table 18).

In order to obtain the maximum number of sprouts at the most desirable stage of development for marketing, the fields are usually picked over a number of times at short intervals. The sprouts are picked from the plant by hand. Usually there is no need for trimming

sprouts; but if one or more outer leaves show noticeable discoloration, they may be stripped off. Since the sprouts grow on the stalks at a considerable distance above the ground, washing is unnecessary in preparing them for market.

In California, brussels sprouts are generally packed in drums, cylindrical-shaped containers made of veneer wood. The drum commonly used is approximately 13⅞ inches deep and 13½ inches in diameter with a volume of 28 quarts, and is spoken of as the "25-pound drum" or "half drum" although it was originally designated as "one-fourth drum." Another container which is occasionally used for shipments from California is a box 9¾ by 11 by 20⅝ inches. Several inches of crushed ice is usually placed in the top of each container before it is closed. A third type of container is a crate with dimensions approximately 11½ by 15 by 22 inches. It is used principally for shipments within the State, and a thin layer of shaved ice is sometimes placed on top of the sprouts.

In the eastern growing sections, most sprouts are marketed in the common 1-quart berry box. The top layer is made as uniform, tight, and smooth as possible to serve as a face. The berry boxes are most frequently packed in a 32-quart strawberry crate, but may be packed in a container holding 16 or 24 quart boxes.

Package ice is not used for sprouts packed in berry containers. Owing to the fact that most stock packed in this manner is shipped to nearby markets, top ice is generally not necessary. Sprouts, like cabbage, do not wilt as rapidly as some of the delicate leafy vegetables, and if not exposed to very hot, dry air will keep fairly well.

In California, the half drums are mostly loaded into refrigerator cars for shipment to eastern markets. Many of the shipments are part of mixed cars containing such commodities as artichokes, broccoli, or cauliflower. The drums are usually loaded standing on end seven rows wide and three to four layers high. Crushed ice is spread over and through the load, ranging from a foot to nearly 2 feet deep on top. The car bunkers are usually not iced.

During the 4 years, 1937–40, most of the monthly average wholesale prices of California brussels sprouts in New York City and Chicago were between $1.75 and $3 per half drum of 25 pounds. Brussels sprouts grown in New York State sold mostly at wholesale from 10 to 15 cents per quart (table 19).

Collards

In the Southern States and among certain portions of the population in a few larger northern markets, collards are popular greens. The collard is best described as a nonheading form of cabbage and resembles cabbage very closely (fig. 8). There are a good many varieties and strains of collards but one of the chief characters of variability is the stalk length. For distant markets, the low-growing, compact types with relatively short spaces between the leaf stems are generally preferred to the types with long stalks and longer spaces between leaves. In selecting plants for seed, consideration is usually given to the market preference for collards which are of a rich green, without appreciable purplish cast, and with a minimum of "bone" which means prominent whitish midribs and veins.

Collards are popular in the South. The equivalent of 214 carloads were reported as receipts at Atlanta in 1939, and were mostly from Georgia. The reported receipts in New York City totaled 464 carloads. Virginia, New York, and New Jersey were the chief sources of supply. From April to September, supplies are lighter than during the remainder of the year (table 18). Truck receipts amounted to nearly 70 percent of the New York annual supply of collards in 1939, and slightly over half the supply was received on the farmers' markets.

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FIGURE 8.—Collard plant. Large, well-developed specimen of the low-growing type.

TABLE 19.—*Average wholesale prices of brussels sprouts, collards, dandelions, turnip tops, hanover salad, mustard greens, rappini, broccoli rabe, and Swiss chard, by months, leading States of origin, and containers, New York City and Chicago, 1937–40* [1]

BRUSSELS SPROUTS

Market, year, origin, and container	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York, 1937:	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Calif., ½ drum, 25 pounds	2.31	3.19	2.50						3.06	2.75	1.72	1.78
Long Island, N. Y., quart		.13	.14	0.14					.13	.12	.10	.09
Catskill district, N. Y., quart								0.14	.15	.13	.12	
New York, 1938:												
Calif., ½ drum, 25 pounds	2.00	2.84	2.58						2.56	2.28	1.72	2.06
Long Island, N. Y., quart	.09								.12	.10	.10	.10
Catskill district, N. Y., quart								.16	.16	.12		
New York, 1939:												
Calif., ½ drum, 25 pounds	1.99	2.74	2.84	2.38				2.02	2.02	2.65	2.20	1.84
Catskill district, N. Y., quart								.13	.14	.12	.11	
Long Island, N. Y., quart									.11	.11	.12	.11
New York, 1940:												
Calif., ½ drum, 25 pounds	2.17	2.69	3.05					3.02	2.23	1.85	1.40	1.87
Long Island, N. Y., quart	.11			.12				.13	.12	.10	.09	.10
Catskill district, N. Y., quart								.15	.14	.10		
Chicago, 1937:												
Calif., ½ drum, 25 pounds	2.41	2.98	2.62						2.90	2.61	1.66	1.73
Chicago, 1938:												
Calif., ½ drum, 25 pounds	2.12	2.76	2.44						2.34	2.09	1.62	1.83
Chicago, 1939:												
Calif., ½ drum, 25 pounds	1.74	2.61	2.76	2.53				2.60	1.93	2.61	2.09	1.64
Chicago, 1940:												
Calif., ½ drum, 25 pounds	2.11	2.88	3.19					2.64	2.13	1.82	1.18	1.58

See footnotes at end of table.

TABLE 19.—*Average wholesale prices of brussels sprouts, collards, dandelions, turnip tops, hanover salad, mustard greens, rappini, broccoli rabe, and Swiss chard, by months, leading States of origin, and containers, New York City and Chicago, 1937–40* [1]—Continued

COLLARDS

Market, year, origin, and container	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
New York, 1937:	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
Virginia, barrel	0.96	1.00	1.31							1.25	1.12	1.46
Virginia, bushel	.40	.33			0.48							.45
New York, 1938:												
Virginia, barrel	1.41	1.81	1.25								1.12	1.10
Virginia, bushel	.45	.62	.42	0.70	.40					.65	.45	.37
Nearby, bushel					.45	0.38						
New York, 1939:												
Virginia, barrel	1.11	1.00	1.01									
Virginia, bushel	.34			.80	.77							.42
New York, 1940:												
Virginia, barrel	1.33	1.49									.97	.98
Virginia, bushel	.53	.68	.58	.51	.49						.39	.39
Georgia, Los Angeles ½ crate, bunched		1.41	1.41									
Chicago, 1937:												
Louisiana, bushel basket	.76	.64	.83	1.25								.90
Virginia, bushel basket	.65	.42									.70	.80
Texas, Los Angeles ½ crate	.96	.92	1.02	1.50								.93
Chicago, 1938:												
Louisiana, bushel basket	.93	.91	.80	1.06							.82	.74
Louisiana, 1⅑ bushel crate	1.22	1.21										1.08
Georgia, 1⅑ bushel crate	1.46	1.55	1.22	1.25								
Texas, Los Angeles ½ crate	1.02	1.00	.93									1.12
Virginia, bushel basket	.52											.45
Chicago, 1939:												
Louisiana, bushel basket	.98	.90		1.06								.86
Chicago, 1940:												
Georgia, Los Angeles ½ crate	1.16	1.48	1.44		1.17							
Louisiana, bushel basket	.97		1.14	1.02							.98	.95
Virginia, bushel basket											.89	.69

DANDELIONS

New York, 1937:												
Texas, Los Angeles ½ crate	1.33	1.58	1.40	1.31							1.44	1.28
New Jersey, bushel			1.25	.76	0.38							
California, Los Angeles ½ crate			1.50									1.38
New York, 1938:												
California, Los Angeles ½ crate	1.50	1.38										1.75
Texas, Los Angeles ½ crate	1.20	1.11	.75									1.16
Texas, bushel basket	1.06	.81	.71								1.25	1.31
New Jersey, bushel			.61	.45								
New York, 1939:												
California, Los Angeles ½ crate	1.65											
Texas, bushel basket	1.31	1.04	1.10	.99								
Texas, Los Angeles ½ crate	1.07	1.15	1.05									1.15
Nearby, bushel				.74	.53							
New York, 1940:												
California, Los Angeles ½ crate	1.59	1.56	1.57									
Texas, Los Angeles ½ crate, bunched	1.22	1.29	1.00	.76							.96	1.10
Texas, bushel basket	1.27											1.27
Nearby, bushel			1.47	.56	.38							
Norfolk section, Va., bushel											.58	.52
Chicago, 1937:												
Texas, Los Angeles ½ crate, bunched	1.24	1.52	1.34	1.34							1.32	.94
Illinois, bushel basket				.56	.50				0.81			
Indiana, bushel basket									.89	0.86	.95	
Chicago, 1938:												
Texas, Los Angeles ½ crate, bunched	1.12	.99	1.00	1.00							1.05	1.04
Illinois, bushel basket				.69	.55	0.56						
Indiana, bushel basket									.90	.80	.75	
Chicago, 1939:												
Texas, Los Angeles ½ crate, bunched	1.04	1.06	1.09	1.11							1.38	1.10
Midwestern, bushel, loose					.60					1.08		
Chicago, 1940:												
Texas, Los Angeles ½ crate, bunched	1.15	1.21	1.10	1.15							.95	.87
Midwestern, bushel										.93		

See footnotes at end of table.

TABLE 19.—*Average wholesale prices of brussels sprouts, collards, dandelions, turnip tops, hanover salad, mustard greens, rappini, broccoli rabe, and Swiss chard, by months, leading States of origin, and containers, New York City and Chicago, 1937–40* [1]—Continued

TURNIP TOPS [2]

Market, year, origin, and container	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
New York, 1938:												
Nearby, bushel					0.38							
New York, 1939:												
Virginia, bushel			0.30		.51							0.45
New York, 1940:												
Virginia, bushel			.37	0.38	.51							
Chicago, 1937:												
Texas, Los Angeles ½ crate	1.20	0.92	.82									
Tennessee, bushel	1.31	1.83	1.69	1.19	1.12						1.07	1.19
Illinois, bushel			.90	.89	.59	0.19	0.22			0.27		
Chicago, 1938:												
Texas, Los Angeles ½ crate	.91	.69										.70
Tennessee, bushel	1.25	1.29	1.25	1.23							.92	1.08
Illinois, bushel			.96		.45	.21	.28	0.27	0.22	.21	.25	
Chicago, 1939:												
Tennessee, bushel	1.46	1.61	1.46	1.25	1.06						1.12	1.16
Illinois, bushel					.32	.21	.25	.24	.56	.31	.36	
Chicago, 1940:												
Tennessee, bushel	1.50		1.42	.92	1.00							
Georgia, bushel	1.42	1.88	.91	.38	.55							
Texas, Los Angeles ½ crate		1.35										
Illinois, bushel				.58	.51	.19	.22	.44	.34			

HANOVER SALAD

New York, 1937:												
Virginia, bushel	0.32	0.32		0.65	0.41							
New York, 1938:												
Virginia, bushel			0.49	.38								0.59
New York, 1939:												
Virginia, bushel	.73	.65	.61	.73	.53						0.48	.44
New York, 1940:												
Virginia, bushel	.61	.54	.48	.44	.43						.39	.45

MUSTARD GREENS

Chicago, 1937:												
Louisiana, bushel basket	0.78	0.82	1.18	0.98							1.00	1.00
Texas, Los Angeles ½ crate	.83	.94	1.14									1.21
Georgia, 1⅓ bushel crate	1.46	1.50	1.58									
Mississippi, bushel basket			1.02	1.14	0.82							
Tennessee, bushel basket				1.19	1.19						.98	
Illinois, bushel basket					.59	0.20	0.24	0.58	0.28	0.25	.53	
Chicago, 1938:												
Texas, Los Angeles ½ crate	.88	1.07	1.04									.99
Georgia, 1⅓ bushel crate	1.33		1.19									
Louisiana, bushel basket	1.07	.96	.88								.70	.72
Mississippi, bushel basket			.90	.98	1.00							
Illinois, bushel basket				1.00	.70	.21	.23	.30	.24	.19	.38	
Chicago, 1939:												
Louisiana, bushel basket	1.09	1.24									1.04	.94
Mississippi, bushel basket			1.31	1.19	1.06							.90
Tennessee, bushel basket					1.14						1.19	1.17
Illinois, bushel basket						.22	.24	.25	.55	.32	.47	
Chicago, 1940:												
Louisiana, bushel	1.35			1.11							1.02	.94
Texas, Los Angeles ½ crate	1.14											1.01
Georgia, bushel			1.44	1.16								
Mississippi, bushel				1.02	.88							
Illinois, bushel						.20	.27	.43	.31	.25	.32	

See footnotes at end of table.

TABLE 19.—*Average wholesale prices of brussels sprouts, collards, dandelions, turnip tops, hanover salad, mustard greens, rappini, broccoli rabe, and Swiss chard, by months, leading States of origin, and containers, New York City and Chicago, 1937–40* [1]—Continued

RAPPINI [2]

Market, year, origin, and container	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
New York, 1937:												
California, Los Angeles ½ crate	2.62	2.75	2.00									
Georgia, crate		2.00	1.88									
New York, 1938:												
California, Los Angeles ½ crate	2.62	2.38	1.25									
New York, 1939:												
California, pony crate	2.65	2.10	2.32									
New York, 1940:												
California, pony crate	2.57	3.29	1.96						1.68			
Chicago, 1937:												
California, pony crate			2.25									
Chicago, 1938:												
California, pony crate		2.22	2.20								2.00	
Chicago, 1939:												
California, Los Angeles ½ crate	2.15										1.75	1.54
California, pony crate		2.00	1.88									
Chicago, 1940:												
California, pony crate	2.50	2.19	2.38	1.19								

BROCCOLI RABE [2]

New York, 1937:												
South Carolina, eastern lettuce crate	1.17		1.25								1.23	1.58
Virginia, bushel, loose	1.44	1.12	.89	0.51								
New Jersey, bushel, loose			1.12	.63	0.52							
New York, 1938:												
Virginia, bushel		1.04	.39	.32								.62
New Jersey, bushel			.38	.62	.48							
New York, 1939:												
Virginia, bushel	.75	.95	.60	.82								
North Carolina, Los Angeles ½ crate		1.75	1.50									
New Jersey, and nearby, bushel			1.25	.94	.84							
New York, 1940:												
South Carolina, eastern lettuce crate	1.48	2.12	1.88									
Virginia, bushel			1.04	.40								
New Jersey, bushel				.59	.62							

SWISS CHARD

Chicago, 1937:												
Illinois, bushel							0.32		0.35			
Chicago, 1938:												
Illinois, bushel							.25	0.38	.50	0.42		
Chicago, 1939:												
Illinois, bushel										.31	0.20	
Chicago, 1940:												
Illinois, bushel							.35		.25	.28		

[1] Prices are unweighted averages of midpoints of daily price ranges for stock of good quality and condition. In some instances, prices for 1 day each week were used in computing the monthly averages. The daily price range for any item is often rather wide, and these unweighted averages can be considered only as general price indicators. Prices are not shown for all States of origin represented in the supply each year. For some of these commodities, both bunched and loose stock may be included.

[2] Due to the similarity of greens sold in some eastern markets as turnip tops, mustard greens, rappini, and broccoli rabe, there is some confusion and overlapping in price reports furnished by the trade. The nomenclature varies to some extent among markets and handlers. In some market reports "rape" and "rappia" are included under broccoli rabe.

Collards are harvested similarly to kale when a sufficient number of plants in the field have attained satisfactory size. Cutting is done by hand with a large-bladed knife, the cutter walking along the row and cutting off the plants which are suitable for shipment. Any trimming that seems necessary is usually done as the plants are put into containers after they have been cut. Defective outer leaves may be broken off, and in case a fairly large seed stem has developed in the center of the plant, it may be broken off near the base. Plants which have not yet developed seed stems, however, are preferred by the trade.

Most collards are not washed, although some shipments are run over a conveyor-type spray washer like that used for spinach. The majority of shipments are packed loose, but some are bunched. The method of bunching is to tie from one to several plants so that the leaves are held tightly together. These units usually weigh about 1½ pounds. The butts are sometimes trimmed off after tying, in which case some of the lower leaf stems may be cut, leaving the leaves unattached in the bunch.

A number of different containers are used for marketing collards; the round-bottom bushel basket apparently being most popular. In the Norfolk area, the basket barrel described under the heading of kale, is used to some extent as a shipping container. In Louisiana the 1⅓-bushel crate is commonly used and is packed with 2½ dozen bunches. Various other containers are used to some extent, and some collards are sold by the dozen bunches in local markets.

Where washing or bunching is not practiced, packing for market may be done directly after cutting in the field. The plants must be pressed down into the container with considerable force in order to get a tight, heavy pack. Package ice is frequently used in shipments which are to go a long distance, and crushed ice is placed in the middle of the pack at the rate of about 5 to 8 pounds per bushel basket.

Most shipments move by truck, but when bushel baskets are loaded in railroad cars, the customary loading of six rows and six layers is generally used. For rail shipments and long-distance truck shipments chunk ice is used over the top of the load.

In New York City, collards from Virginia sold generally at wholesale within a range of 35 to 70 cents per bushel in 1937–40. In Chicago in those years, Louisiana collards sold mostly within a general range of 75 cents to $1.10 per bushel (table 19).

Dandelions

Although the wild dandelion is one of our commonest weeds, improved varieties of the plant are grown commercially to a considerable extent for greens. Dandelions which are gathered in meadows, along fence rows, and in similar places usually do not enter appreciably into commercial channels. A large number of different varieties of dandelions are grown commercially. These vary widely in character of growth, length, and width of leaf as shown in figure 9. In some markets, dandelions are referred to as "chicorie" by many dealers of recent European extraction.

New York City received the equivalent of 435 carloads of dandelion greens in 1939. Most of these were from New Jersey and New York and were received from March to November. Eighty-four percent

of the receipts were on the farmers' markets. Other States as Texas and California and districts near many of the markets produce dandelions.

Although dandelions with many well-developed leaves are desirable, careful observation is required to insure the cutting of the plants before the appearance of flower buds which develop very rapidly once they start. The plants are usually cut by hand with a large-bladed knife, but they may be cut with a sharp blade on a hand cultivator or other tool. The taproot is cut a little below the surface of the ground to insure the plants holding together and to decrease

LEFT, AMS 2161; RIGHT, AMS 2130

FIGURE 9.—Bunched dandelion greens, illustrating two contrasting types.

their tendency to wilt. The plants are generally picked up by hand and placed in a field container to be transported to a place where they are prepared for packaging.

Trimming usually consists of pulling off any discolored leaves which may be present and in some cases cutting off excess length of taproot. Where packing is done in the field, the trimming also is done there; otherwise, it is usually done in the packing house.

In most commercial shipments, the plants are bunched, but some lots are not bunched. The number of plants put in a bunch varies with the type and size of plant and the size of bunch. Raffia is most commonly used for tying.

In many instances dandelions are washed in preparing them for market. A common method of washing is to immerse the bunches in water before placing them in the container. Other methods used are

spraying of the bunches or the individual plants, dipping the packed containers under water, or hosing down the packed containers.

A wide assortment of containers is used for dandelion greens. Owing to the fact that such large quantities of these greens are grown close to the markets and hauled to farmers' markets for sale, it is difficult to ascertain which type of container is most commonly used. Stock grown near the large eastern markets is packed in 32-quart berry crates, wire-bound orange boxes, round-bottom bushel baskets, bushel hampers, and other containers. In Texas and California the principal container is the Los Angeles half crate. The round-bottom bushel basket also is used to some extent in Texas.

The number of bunches packed in the half crate is usually 3 dozen. The number of bunches packed in 32-quart crates and orange boxes varies with local practices and individual shippers. Dandelions packed in round-bottom bushel baskets are usually not bunched.

Package icing is rather general in Texas and California when the dandelions are to be shipped a long distance. About 10 to 12 pounds of crushed ice are placed near the center of the crates and another layer of ice is placed on top of the pack before the crates are closed. Most dandelions in other types of containers intended for nearby markets are not iced in the containers, although in some cases a small amount of package ice may be used.

A greater percentage of dandelion shipments move by truck than by rail, according to available figures. The volume of rail shipments is difficult to ascertain because of the fact that most dandelions shipped to far distant markets are included in carloads of mixed vegetables. The method of loading trucks depends upon the type of containers and the size of truck. The method of loading cars is irregular because two or more commodities in each car may be in different containers. When the dandelions are packed in half crates, the containers are usually loaded on the sides, eight rows wide, four or five layers high, with a top layer of crates, bulge side up, six rows wide. Bushel baskets are loaded in the usual manner, six rows wide, six layers high, with alternate baskets inverted. Usually crushed ice is placed over the top of the load to a considerable depth, but the car bunkers are left empty.

Dandelion greens from nearby districts sold mostly within a range of 50 cents to $1 per bushel in New York and Chicago during 1937–40, but there were some sales considerably outside this range. Los Angeles half crates from Texas and California ranged generally from $1 to $1.50 (table 19).

Turnip Tops, Including Seven-Top Turnip and Rappini

Turnip greens vary considerably in appearance, depending upon the variety and the stage of development at which they are harvested. The most common form appearing in the markets are the young turnip tops harvested while the plant is still very young (fig. 10). These plants are generally of medium to small size, of medium to lightish green color and of dull appearance due to the pubescent surface of the leaves. Turnip tops are known in many localities as turnip salad.

The seven-top turnip is a type of turnip selected for its tendency to produce more than one blossom shoot and relatively little bulb

formation of the root (fig. 11). If harvested when young, the plants look like the ordinary small turnip tops, but they are usually harvested when they begin to develop the blossom shoots after remaining dormant in the field through the winter. At that time the leaves have mostly become larger, darker green in color, and have smooth, rather glossy surfaces.

Harvesting is usually done by hand with a large-bladed knife, the plants being cut just below the crown at about the surface of the

FIGURE 10.—Mustard (*A*), turnip tops (*B*), and hanover salad (*C*). Although turnip tops and hanover salad look very much alike in the illustration, the leaves of hanover salad are usually darker green, smoother, and glossier than those of turnip tops.

ground. The time of cutting varies considerably with market conditions, but for ordinary turnip tops the preference seems to run to young, small greens. In the case of stock marketed as seven-top turnip, the flower shoots are allowed to grow and develop flower buds, but care is taken to harvest them before the flower buds have become objectionably large. The plant will usually produce new flower shoots several times.

Occasionally very small turnip plants with no bulb development are pulled by hand and marketed with the roots attached. In some producing centers, especially in California, and sometimes in certain markets, this type of greens is known as rappini. The name is reported to be derived from part of the Latin name for turnip, *rapa*. and the suffix *ini*, meaning small.

The only trimming necessary is the removal of yellow or discolored leaves. These are usually broken off as the plants are put into field containers, but trimming may be done later, if the stock is to be bunched.

Turnip tops are marketed both loose and bunched. In bunching, a handful of plants is gathered together with the tops all in one direction, and tied tightly around the middle with raffia or some other material. Very small plants with roots attached, and seven-top turnips when the shoots only are harvested, are usually bunched.

Most turnip greens are washed either by dipping or spraying. In some cases the individual plants, in others the bunches, and in a few cases, the entire package is immersed or sprayed with water. Washing serves not only to clean the plants, but also supplies moisture in the

AMS 2163

FIGURE 11.—Seven-top turnips showing blossom-shoot development. Either the entire plant or only the shoots may be marketed. As shoots are removed in harvesting, the plant has a tendency to send up a number of new shoots successively.

pack which helps preserve freshness, especially when no package ice is used.

In the eastern and northern parts of the country the round-bottom bushel basket, 32-quart berry crate, wire-bound orange box, bushel hamper, and other containers are used for turnip tops. In Texas, the Los Angeles half crate and round-bottom bushel basket are used. Shipments in the half crate are generally bunched, and are packed 3 dozen to the crate.

For local and short-distance hauling to market, most of the turnip greens are not package iced. Shipments from Texas are usually iced at the rate of 10 to 12 pounds per package.

Shipments are generally carried by trucks to markets within moderate trucking distance, but shipments to distant markets, such as most of those from Texas and some from other Southern States,

frequently move by rail. Round-bottom bushel baskets are loaded in cars in the usual manner, six rows wide and six layers high with alternate baskets inverted. The half crates are usually loaded on edge, three to four layers high, eight rows wide with a top layer of crates lying flat, six rows wide. The load is generally covered with a heavy layer of top ice, but as a rule no ice is used in the car bunkers.

In rail shipments turnip tops are often included in cars with other vegetables. Carloads of turnip tops are reported under the general heading of greens. For these reasons there are no statistics on quantities shipped. In New York City, receipts of turnip tops are included under the general heading of Broccoli rabe (table 18).

Turnip tops have ranged widely in price in New York City and Chicago in recent years. Wholesale prices have been mostly within the range of 20 cents to $1.50 per bushel (table 19). Monthly average prices of rappini in New York City during 1937–40 have mostly been within the range of $2 to $2.75 for a Los Angeles half crate. In Chicago for most months during the period, the average price has been between $2 and $2.50 for a pony crate.

Hanover Salad

There is some disagreement over the identity of hanover salad, but the name seems to be correctly applied to a plant of the kale family also known as a variety of smooth kale (figs. 10, *C*, and 12). The plant has a habit of growth, color and texture of leaf, and size very much like the curly leaved kales but its leaf is very smooth with little or no wrinkling. It resembles turnip tops except that the latter are lighter green and less glossy, and in its younger stages, it very closely resembles rape (figs. 10 and 13). It is believed to have derived its name from Hanover County, Va., where it was formerly grown extensively.

According to some dealers, rutabaga or swede turnip tops are sometimes sold under the name hanover. It is also known that the hanover salad plants are sometimes sold as rape or smooth kale.

Hanover salad is grown in rather large quantities in the Norfolk, Va., district. It is shipped principally from March to May. The equivalent of 18 carloads were received in New York in 1939 (table 18). Most monthly average wholesale prices have been between 30 and 75 cents per bushel in New York in the years 1937–40 (table 19).

Hanover may be marketed at various stages of development but is usually allowed to attain fairly large size. Harvesting is generally done by hand with a large-bladed knife. The desirable plants are cut and put in containers along the rows after the discolored or otherwise damaged leaves have been removed. In most cases, the plants are not washed, but occasionally washing is resorted to, in which case a conveyor-type washer designed primarily for spinach and described under that heading is likely to be used.

The round-bottom bushel basket is generally used for packing hanover. The plants are practically never bunched. About 5 to 8 pounds of crushed ice is used in a container, and is put in about two-thirds of the way up from the bottom.

Consumption of this green is practically confined to a small number of cities on the Atlantic seaboard. Most shipments move by truck

since the producing disticts are mostly in the middle Atlantic seaboard areas. Some hanover moves in rail shipments of mixed vegetables.

AMS 2011

FIGURE 12.—Hanover salad, or smooth kale. Typical large plant which has lived through the winter.

AMS 1760

FIGURE 13.—Rape. A small and a medium-sized plant of the type grown for market greens.

The methods of loading and icing are in general the same as for kale: in cars the baskets are stowed six rows wide and six layers high with alternate baskets inverted, and with chunk ice over the top of the load.

Mustard Greens

There are several different types and many varieties of mustard, but the type which seems to be of outstanding commercial importance is rather small, of medium green color, very glossy surface, and the edges of the leaf are very much folded and ruffled giving it a plumelike appearance (see fig. 10 *A*). These greens are called mustard salad in some sections.

In New York City, the equivalent of 308 carloads of mustard greens was received in 1939. About 95 percent of these were truck receipts, and a very large part was sold on the farmers' markets. The New York City supply came mostly from New York and New Jersey. There were some receipts by rail from California. Receipts of 256 cars in Los Angeles were all from California (table 18).

Mustard is marketed in very much the same manner as turnip greens. The plants are usually hand harvested with a large-bladed knife, being cut off at the surface of the ground just below the crown. Occasionally, small plants are pulled and marketed with the roots attached.

Trimming, if any, consists of removal of discolored or otherwise damaged leaves. Most mustard greens are not bunched, but many lots are bunched in about the same manner as turnip tops. In some instances, these greens are washed in preparation for market and in some instances they are shipped unwashed.

The containers most widely used in the shipment of mustard greens are the round-bottom bushel, the half crate, and the 1⅓-bushel crate. In the northeastern and to some extent the southern part of the country, the round-bottom bushel basket is the leading container. In California the Los Angeles half crate is principally used, while the pony cauliflower crate is used to some extent. In Texas, the half crate and the 1⅓-bushel crate are used. Various other containers such as the 32-quart berry crate and wire-bound orange box are used for local marketing.

Shipments which travel to distant markets are usually package-iced. The amount of crushed ice used in each package is frequently about 10 to 12 pounds. For local marketing, package icing is not usually considered necessary.

Mustard greens are mostly shipped either in carloads of mixed vegetables or by truck. For that reason, accurate information about the relative proportion of shipments moving by truck are unavailable. The methods of loading rail shipments are the same as for other commodities in given containers. For example, the round-bottom bushel baskets are usually loaded six rows wide, six layers high with alternate baskets inverted; while the half crates are usually loaded on edge, eight rows wide, three layers high with a fourth layer of crates lying flat six rows wide. Large amounts of top ice are generally used in either type of load.

Rape

Although known primarily as a very effective cover crop and a good forage crop, certain strains of rape are grown for fresh greens (fig. 13). It is occasionally called plain kale, probably because of its resemblance to the smooth leaf strains of kale. The leaves are usually of a dark green color, thick texture, heavily veined and broken up

into numerous lobes with little or no wrinkling. The profile of the leaves usually closely resembles that of turnip leaves but the texture of the latter is more delicate. In some eastern markets, rape is occasionally sold as broccoli rabe.

Rape for use as greens is grown only on a small scale, and is mostly marketed locally. The plants are usually cut with a large knife by hand; trimmed, if necessary, by the removal of discolored or damaged leaves, and put into containers. Some shipments are washed and some are not, depending probably upon conditions at the time and place of harvesting.

The most commonly used container is the round-bottom bushel basket, but various other types of containers such as berry crates, orange boxes, hampers, and crates are used. Ice is not used to any great extent in the packages or on the loads because of the local nature of most of the marketing.

Broccoli Rabe

The name broccoli rabe, sometimes spelled "raab" or "rab," is used by the produce trade in a few eastern markets to designate certain plants mostly of the turnip family which are harvested for greens, in most instances after they have begun to develop blossom shoots. In certain markets the name rabone is used by some dealers to designate the same greens. Broccoli rabe may consist of the entire above-ground portions of the plants or it may be merely the flower shoots which have been picked off at a point above the crown of the plant. Such shoots usually have some small leaves attached.

In a more restricted sense, some seedsmen and other authorities use the term "broccoli rabe (raab)" in referring to a strain of foliage turnip selected for its tendency to produce large flower shoots. In the broader sense of the term, as generally used by the trade, broccoli rabe includes: seven-top turnips (fig. 11), turnip-type broccoli (fig. 14), and, in some instances, turnip tops (fig. 10, *B*), and even mustard greens (fig. 10, *A*), and rape (fig. 13). It is unfortunate that the name broccoli rabe has been indiscriminately applied to a number of distinctly different plants. Considerable confusion would be avoided if the name were used to apply only to the particular type of foliage turnip which has been developed for its tendency to produce large flower shoots.

Receipts of so-called broccoli rabe, including turnip tops, as reported at New York City in 1939, were equivalent to 593 carloads. Ninety-eight percent of the receipts came by truck and originated in eight Atlantic seaboard States, from South Carolina to Connecticut. Virginia was the leading source of supply in New York, about half the supply having originated in that State in 1939. More than a third of the annual receipts were in March (table 18). Farmers' market receipts amounted to about 20 percent of the reported total for New York City. Some of the greens marketed in New York and other eastern markets as broccoli rabe are marketed in other parts of the United States as turnip tops or similar greens.

Harvesting is usually done by hand, either by cutting off the plants just below the crowns with a large knife, or by picking off the blossom shoots which are of the right size and stage of development. The plants are most often packed loose, but they are sometimes bunched,

especially when only the shoot portions are harvested. The container most commonly used is the round-bottom bushel basket, although various other containers may be used, principally for nearby marketing. The plants are not usually washed, but in some cases where stock is intended for local market the packed containers are dipped in cold water and not iced. Icing practices for the bushel baskets vary, but in most shipments to distant markets, ice is used in the packages as well as on top of the load.

Wholesale prices of broccoli rabe in New York City during the 4 years, 1937–40, in most months from November to May averaged

AMS 2159

FIGURE 14.—Turnip-type broccoli. It is often sold as broccoli rabe.

between 50 cents and $1.50 per bushel or eastern lettuce crate. No wholesale prices were reported during the period June to October, in the 4 years (table 19).

SWISS CHARD

Although Swiss chard is of relatively minor importance among the commercial greens, it is fairly well known by the consuming public because it is widely grown in home gardens. The plant is closely related to the beet, but has been bred and selected to produce larger leaves and practically no bulb formation. The common types have glossy, medium-green leaves with white midribs and veins (fig. 15). Other strains have leaves and midribs colored very much like those of the garden beet, but the midribs of all chard plants are much broader than those of beets.

Nearly 500 carloads of Swiss chard were received in New York City in 1939 from New Jersey and New York. The main part of the season was from June to November (table 18). All the receipts were by truck and nearly all were received on the farmers' markets. Very few wholesale prices were reported. Prices of Swiss chard in Chicago in 1937–40 ranged mostly from 25 to 50 cents per bushel.

There are several methods of harvesting Swiss chard for market. One of these is to pull the small plants and leave the roots attached. Another method is to cut off the entire plant just above the crown so

AMS 2167

FIGURE 15.—Swiss chard. Most chard is marketed before it has attained the size of this plant. In the younger stages the leaf stems are smaller and more tender.

that most of the leaves are separated. A third method is to break off the larger leaves from the outside, leaving the plant to continue growth.

Chard is more often bunched than not, especially if medium-to-small size plants are harvested. When marketed with roots attached washing is helpful in improving the appearance. Washing is quite general and is accomplished in many cases by the use of a spray of water from a hose.

Various crates and boxes are the customarily used marketing containers. Baskets and hampers with rounded or sloping surfaces are less satisfactory because of the length of the plants and difficulty of packing without breaking the stems. Ice is generally not used because of the local nature of the marketing and the fact that the heavy stems tend to prevent rapid wilting.

Beet Tops

Considerable acreages of beets are produced for the tops which are marketed locally in some sections. The beets are usually of the common garden varieties.

The greens are usually harvested while the beets are relatively young and the majority of the leaves are still succulent and tender. At that time, there is little or no bulb formation and the leaves are usually smaller than those on older, well-developed beets. If the plants are very young and small they may be pulled up and the roots allowed to remain attached, but more frequently the tops are cut off by hand with a large knife.

Bunching is practiced in some instances, but it is probable that the majority of shipments are not bunched. They are usually washed, a common practice being to spray them with a stream of water from a

AMS 2012

Figure 16.—Borage or barrach. Well-developed plant approximately 10 inches in height.

hose. They are marketed in various types of containers, such as bushel baskets, bushel boxes, hampers, and used containers of several types. Generally speaking, no package ice is used for beet tops, owing to the local nature of the marketing. A small amount of top ice is frequently used while the greens are in transit or awaiting sale in the market. When the greens are in open containers, small pieces of ice may be laid directly on the leaves.

Borage (Barrach)

Borage is commonly referred to as barrach in the New York City market, but the former is the correct name. It is classed by seedsmen as an herb, and in addition to being used for greens, it is said to be used as a potherb, a flavoring for cold drinks, a garnish or part of mixed salads, and is even recommended to be grown in fields as pasturage for bees. The plants when well developed have characteristics somewhat between those of beets and spinach (fig. 16). The leaves

are large, broad, and oval, with short stems. They are dull, dark green with a faint tinge of red and are decidedly pubescent. The stems are reddish green in color.

Receipts of borage (barrach), which were equivalent to 58 carloads in New York in 1939, were mostly on the farmers' markets (table 18).

The borage plants are harvested when they have become well developed and have reached a height of about 1 foot. They are cut off at the surface of the ground, just below the crown of the plant. They are marketed in various types of containers such as crates, orange boxes, and hampers. The plants are usually not tied in bunches.

Cabbage Sprouts

The name cabbage sprouts is primarily used to designate leafy forms of cabbage marketed expressly for greens. These may be either young plants cut before they have developed any head formation or small leafy sprouts cut from the stumps left in the field after the heads have been harvested. They are marketed in considerable quantities. The name is also used occasionally to designate the young blossom shoots picked from old cabbage heads that have started to go to seed. Shipments of the latter type are of practically no commercial importance.

A further use of the name sprouts is in designating young blossom shoots of other members of the cabbage family, chiefly collards, but to some extent kale and hanover. These shoots are obtained from plants that have passed the desirable stage for shipment of the foliage, and resemble the smallest shoots of broccoli. They are of comparatively little commercial importance.

Land Cress

Land cress is frequently called field salad, upland cress, or just cress, and is distinct from water cress. It is easily recognized by its long, finely divided leaves which have numerous small lobes along a large midrib, and by its spreading, straggly habit of growth (fig. 17). The leaves are quite similar in appearance to those of water cress, but the land cress leaves are usually smaller lobed, thinner, and lighter green. It is used both as greens and as a salad vegetable.

Although cress is of relatively little importance in the general field of greens, there are rather large quantities of it sold in some eastern markets in the spring. It is usually gathered where it has grown wild but in some cases it is planted as a cultivated crop. The plants are cut by hand just below the crown, at the surface of the ground. They are packed loose, usually in round-bottom bushel baskets, and are frequently washed with a spray from a hose. Cress is usually hauled to nearby markets and package ice or top ice is rarely used.

Poke

A native perennial plant of wide distribution, poke is considered a rather troublesome weed by many. It is known in various localities by the following names: scoke, garget, pokeweed, pokeberry, and inkberry. It is a large, spreading, tree-shaped plant which grows to a height of well over 6 feet, bears clusters of purple berries and dies down in the fall.

Poke is of very little commercial importance, and is marketed in very limited quantities for a short time in the spring. It is usually gathered from plants which grow wild. Young shoots are cut off when they have reached a height of 6 to 8 inches above the ground, with leaves just beginning to unfold. The shoots are usually tied in bunches about the size of asparagus bunches (fig. 18). Care should be taken to avoid getting pieces of poke root into the portion prepared for food, as the root is poisonous.

Miscellaneous Greens

Most of the products mentioned below are used almost exclusively as greens, but lettuce, escarole, and endive are used chiefly in other ways and are only used as greens to a limited extent.

Figure 17.—Land cress or upland cress.

Cabbage Leaves.—Leaves are sometimes broken from the cabbage stem and shipped to market for greens when price conditions are favorable.

Chinese Cabbage.—Chinese cabbage is also called pe-tsai or celery cabbage, and is used both as cabbage and as a green. The open-growing, nonheading forms are marketed primarily for greens, whereas the heading forms are marketed for uses similar to those for head cabbage (fig. 19).

Chinese Mustard.—Chinese mustard, also called pak-choi, is somewhat similar to the more open growing forms of Chinese cabbage and is easily confused with them. It usually has longer leaf stems than most varieties of Chinese cabbage and is used almost entirely for greens.

Sorrel.—The name sorrel is applied to two distinct types of plants which are used as food. Both have a relatively high content of oxalic acid which gives them a sour flavor, but in other respects are quite different. The type known as garden sorrel is of some commercial importance, being sold in a few eastern markets. It is a plant of the

genus Rumex closely resembling the common sheep sorrel. Its leaves are of a light, dull-green color, and are narrow and pointed in shape like an arrowhead. It is used for greens and in other ways. The other type known by the following names: oxalis, wood sorrel, sour grass, or sour clover, is of practically no commercial importance. It

AMS 2162

FIGURE 18.—Typical bunch and individual shoot of poke.

has small, light-green leaves composed of three rounded leaflets resembling those of clover. The stems are upright, tender, and vary from light green to red.

LAMBSQUARTERS.—Lambsquarters, a common weed of very wide distribution, is also known in various sections as smooth pigweed, white goosefoot, mealweed, meldweed, silverweed, and fat hen. It is related to spinach and in its young stages is widely used as greens, though rarely passing through commercial channels. It is a slender,

open-growing plant with rather small light-green leaves with a silvery sheen on the underside, and may reach a height of several feet when full grown.

Fiddlehead.—The name fiddlehead is given in New England, especially in Maine, to fern fronds used for greens. They are fern fronds which have just started to unroll, and derive their name from the resemblance to the scroll-like curve at the end of a violin. They

Figure 19.—Chinese cabbage. Plant and leaf of Santo-Sai, a semierect to spreading, nonheading type that grows from 10 to 12 inches high. Some other varieties are more compact, whereas a few have a more spreading growth habit.

may be gathered from any large species of fern such as the ostrich, cinnamon, or royal fern, but those without much fuzz are more desirable. The tightly curled fronds are broken off at the ground level and resemble snail shells in shape. They reach one or two of the large eastern markets for a very short period in the late spring, being shipped from Maine.

Spinach Mustard.—Spinach mustard is a green that is not generally known. It is a rapid-growing, mild-flavored plant much like mustard, but also apparently closely related to turnip. The leaves are large, tender, shaped much like those of "strap leaf" varieties of turnips, but are glossy instead of hairy like turnip leaves.

Cucurbit Tips.—The growing ends of cucumber, squash, or melon

vines, are obtained by breaking off a few inches of the tender tips, are sold to some extent in certain southern markets under the name cucurbit tips.

Escarole and Endive.—Escarole and endive, sometimes called chicory, are fairly well-known vegetables which, like lettuce, are used primarily in salads. They, however, are used to a large extent as greens by many people. This group of plants is related to the dandelions, but has been bred to produce a compact growing rosette of leaves somewhat like a loose, open head formation.

Lettuce.—Although generally used as a salad vegetable, lettuce also is used to a limited extent as a green. This is more true of the open-growing, leafy type varieties and romaine lettuce than it is of headed varieties of the iceberg and Boston types.

Leaves of many other plants are known to be used as greens by a few individuals in various parts of the country but none of these are considered of any commercial importance.

SUMMARY

The term "greens" as used in vegetable marketing is generally understood to refer to green leaves and stems of plants which are usually boiled for food. This is in contrast to salad plants which are usually eaten raw. Products included under the term "greens" are spinach, broccoli, kale, brussels sprouts, collards, dandelions, turnip tops, hanover salad, mustard greens, broccoli rabe, Swiss chard, beet tops, cabbage sprouts, and a few others.

Statistics on production and supply of many of these greens are incomplete. In certain representative cities for which information is available there was no pronounced trend in annual supplies of greens as a whole for the period 1931–40. Receipt records indicate that approximately 1 bushel of fresh greens per capita was used annually in eight large cities in 1938–40. In these cities spinach comprised about 57 percent of the supply of greens; broccoli, 12; kale, 4; and other greens, 27. In New York City, receipts of greens by rail, boat, and truck have been equivalent to approximately 10,000 carloads annually in recent years.

Growers market greens by various methods, including sale to local or cash buyers mostly at packing sheds, and sale on farmers' markets, or to wholesalers or chain-store organizations in nearby cities. Shippers in producing areas sell f. o. b. and consign. The auction method of selling is not used to any appreciable extent in marketing greens. Marketing of greens cooperatively by growers is not important insofar as volume is concerned.

For eight representative cities, about 71 percent of the supply of greens arrived by truck in 1940. Long-distance shipments of greens, however, are mostly by rail.

Standards for grade have been issued by the United States Department of Agriculture for some of the leading greens. Federal-State inspection in important producing districts and Federal inspection in the large markets are available for a small charge. Most greens are harvested by hand, a butcher knife being commonly used in cutting the plants. Some greens are marketed bunched, and some loose. Crushed ice is used in the packages and over and through the load in

long-distance shipments of greens. Ice also is used in some instances in local marketing. The bushel basket and various crates are common containers used for greens.

Market prices of greens vary widely, being influenced by volume of supply, quality, and other factors. City wholesale prices of leafy greens in the period 1936–40 have mostly been within the range of 25 cents to $1 per bushel.

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